COMPOUND INTEREST AND ANNUITIES.

The Grounds and Proportions thereof, with Tables to divers Rates most usuall, explained and illustrated with varietie of most *familiar Examples*,

Containing the Art of Decimall ARITHMETICK.

ALSO

The Value of Annuities, accounting simple Interest at 8 *per cent. per Annum.*

For all that delight in Arithmetick, but more especially necessary for those that upon any occasion to Buy, Sell, Take, Exchange, or otherwise to Bargaine for any Interest, Annuities, or Reversions whatsoever for any time, either present or to come.

By WILLIAM PURSER, *Mariner, and Practitioner in the Mathematicks.*

So teach us to number our dayes, that we may apply our hearts unto Wisedome. Psal. 90. 12.

LONDON,
Printed for *R. M.* and are to bee sold by *R. Roydon* of *Bristoll.* 1634.

8 Thom. Tanner.

TO THE RIGHT Worſhipful *Henry Hobſon*, late Mayor of the Citie of *Briſtol*, and to the Aldermen his Brethren, and to the worſhipful *Thomas Iackſon*, and *William Fitz-Herbert*, late Sheriffs, and the reſt of thoſe grave and worthy Senators of the Common Counſell of that Honourable Cittie.

IT *was the opinion of the Ancient* Greekes, *that they onely had Learning, and therefore eſteemed all other Nations (in reſpect of themſelues) barbarous, rude, and ignorant: but they are dead, yet this opinion liveth, for there are that would make a* Monopoly *thereof,*

by appropriating it to themſelves, and certaine places, Vilifying others by theſe, or ſuch like ſpeeches, Can any good thing come out of that Place; *Is not this (——) a man of no reſpect, Doe not Wee know what He is, whence had hee theſe things. For my part, although I (that am as low already as Fortune can make me, and therefore under envie) feare not that Detraction that reſpects my ſelfe, yet I never durſt adventure abroad theſe my labours, (the fruits of idle howres) without a* Patron: *For if I did, malicious* Turkes *detracting tongues would wound even this Free-borne Citizen of the world, and ſay, What if we kill him, it matters not, hee hath no* Pa-teron; *which conſideration hath emboldned me (Right Worſhipfull) to preſent this to kiſſe your Worſhips hands, craving your*

Noble

Noble Patronage, *not doubting but your Names will bee a ſufficient Shield to protect it as free from envy, as it is from blame: the full aſſurance whereof, and your kind acceptation, ſhall both cauſe mee to ſtrive to deſerve this favour, and compell mee for ever to remaine*

Your Worſhps devoted

Servant,

WILLIAM PVRSER.

To the Reader.

TO ſay any thing in praiſe or commendation of *Arithmeticke*, were to as lit le purpoſe, as to light a Candle in the Sunne; for it hath already juſtly gotten a ſufficient repute in the world, that it is both able to defend and commend it ſelfe; every mans practiſe doth make it plainely appeare, that in Commerce the ſmalleſt Bargaines cannot well bee made without ſome knowledge in the *Arte*: Wherefore it is more neceſſary in Annuities and Reverſions, which are commonly the greateſt of Bargaines, and therefore moſt ſubject to danger, without an eſpeciall care taken therein; for although it bee true, that for theſe and others of whole ſale, there can no one generall rule bee given

given, as a direct path for every man to walke in; yet ſuch directions for Annuities and Reverſions may bee drawne from *Arithmeticall* grounds, which may ſerve as guides to direct us, not to ſwerve farre from, which I have endeavored here to do, and I have in part according to my ſlender ability performed; wherein that it may appeare, I have not altogether walked in a diſordered courſe, for the better underſtanding heereof (Courteous Reader) obſerve what order and method I have here uſed, which is briefely thus.

CHAP. 1. Firſt, I have laid the generall grounds of Compound Intereſt and Annuities, which are contained in numbers, in a continued proportion, or as it is moſt uſually called *Geometricall Progreſſion*; the principall *Theorems*, whereof follow in the next place in a briefe manner.

CHAP. 2.

And becauſe the Proportions of Annuities for many yeares in whole Numbers, would in their uſe require infinite Labour, I have therefore ſhewne in a familiar manner the rules of Decimall

CHAP. 3.

Arith-

Arithmeticke (ſuppoſing thee already furniſhed with the firſt principals) whereby Fractions may bee wrought in the ſame manner (and almoſt with the like eaſe) as whole numbers, wherein I have likewiſe ſhewn an excellent way to work great Multiplications and Diviſions, free from that confuſion that the uſuall way of Diviſion is ſubject unto. Thus much generally, which may by the skilfull bee applyed to infinite other uſes. But this for the value of Annuities would but little benefit others, I have therefore here placed eight Tables of Compound Intereſt, in a like order compoſed, each containing ſixe Breviats plainly deſcribed, ſhewing their uſe, and illuſtrated with moſt familiar examples, in imitation whereof any other demand may bee readily anſwered; and becauſe ſome may have farther occaſion of their uſe then five and twentie yeares, the time that theſe Breviats are calculated unto, I have therefore ſhewne how they may bee continued to any number of Yeares deſired which might ſuffice for ordinary uſe, yet have I added the reaſons

Tables.

CHAP. 4.

CHAP. 5.

CHAP. 6.

reaſons of theſe continuations for their ſakes that ſhall deſire it. And then made

CHAP. 7. a more general deſcription of the Tables, whereby they may be uſed to 50. yeares, with the numbers themſelves, without any Continuation, reducing the whole

CHAP. 8. worke into Heads, or Propoſitions, giving to each a generall Theorem of proportion from the grounds, &c. of the firſt Chapter which thou mayſt apply to any other Table or Rate, by helpe whereof, thou mayeſt have variety of proportions. And here I might by way of Applycation, ſhew the particular vſe of every propoſition for the altering of Rents, or Fines of Annuities, or giving time or times for the payment thereof, with many other uſes: but this would in this place bee too tedious (becauſe I have through the whole Worke omitted the Arithmeticall Workes, and left them wholly to thine owne practice and induſtrie, placing onely the proportionall Numbers for brevitie ſake, and avoyding confuſion) and in a manner needleſſe, becauſe the Examples there uſed (which are ſuch familiar Queſtions,

as

as doe beſt illuſtrate the various uſe of the Tables) are therein ſufficient.

And becauſe I have in the next place given generall Directions for the uſe of ſuch like Tables of Compound Intereſt, which although it bee not ſo fully as it would require, yet it is as much as I thought requiſite, knowing how hard it is to pleaſe all men in ſuch like matters as theſe; but pointing at many things whereon I have left thee to comment, and to make the particular application, as thy occaſions require. CHAP. 9.

Laſtly, becauſe the Rules of Compound Intereſt are both difficult and troubleſome, I have therefore ſhewed the Value of Annuities at poſſeſſion, accounting ſimple Intereſt at 8 *per Centum per annum*, which in my opinion I preferre for ordinary uſe before any other Table or Rate, for the facilitie in the worke thereof, and many other reaſons there ſhewen: yet would I referre the full approoving thereof to the judgement of the Iudicious, to whoſe Cenſure I would willingly ſubmit my ſelfe. CHAP. 10.

Yet

Yet let not this difficultie deterre thoſe that are Practitioners, and are willing to learne: for I have compoſed it in ſuch manner, that that which goeth before, explaineth that which followeth, if they note with diligence as they reade, which otherwiſe would be great confuſion in the practiſe.

Thus have I briefly ſhewen the ſumme and contents, order and method heere uſed. And were I now as *Appelles* (behinde his Table to heare what every one ſaid of his worke) I ſhould amongſt infinite opinions (for I am ſure this will be variouſly Cenſured) heare divers Coblers, ignorant detracting *Momiſts*, goe above the Laſt of their Iudgement or Knowledge: Of whom I will take no notice, for I know its neither poſſible to pleaſe every man, nor yet to ſtoppe the mouthes of thoſe that are bent to detraction, it were in vaine for me therefore to expect that, which was never yet obteyned.

But ſome there are, I know, that will accept in good part theſe my poore Labours (for it is common to men and their

eir endeavours to have both enemies and friends) to whom I commend the vſe, profit, and pleaſure of all my paines, whoſe good will ſhall be a ſufficient ſatisfaction to

W. P.

A Perfect and plaine Demonſtration of Intereſt and Annuities, with Tables calculated to divers Rates explayned and illuſtrated *with Examples.*

Chap. I.

Generall Grounds of Intereſt and Annuities, with their proportions.

WHEN reſpect of known equall parts of Time, are all motions ſaid to bee ſwift or ſlow; Times equall parts, are yeares, moneths, or dayes, &c. or a certaine part or number of them.

Amongſt many other properties of Time, this is one, that it bringeth forth Intereſt.

Intereſt is the profit that is rayſed on Money in time limited, and may bee continued regularly thus: At the end of which time, the ſumme of the principall, and former Intereſt, is become a principall, for the next like terme: the Intereſt whereof muſt bee the like part of that principall, as the

former was of its principall,&c. infinitely, which kind of profit is called Intereſt on Intereſt, as in the Example; where the firſt principall *A*, yeeldeth intereſt *F*, in the firſt terme, the ſumme whereof is the principall *B*, whoſe intereſt *G*, added to himſelfe, maketh the principall *C*, ending the ſecond terme, and beginning the third, &c. continuing each principall in his proportion $\frac{1}{10}$ part greater then the former; which principalls doe encreaſe in a continued proportion, commonly called Progreſſion Geometricall.

Termes		
	10000	*A*
1	1000	*F*
	11000	*B*
2	1100	*G*
	12100	*C*
3	1210	*H*
	13310	*D*
4	1331	*I*
	14641	*E*

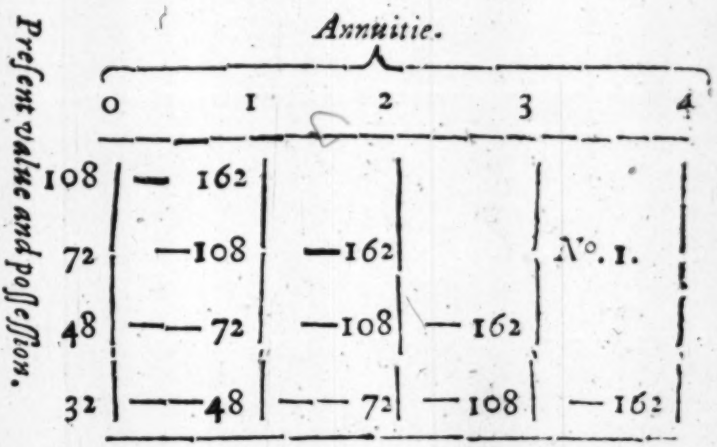
Whereon followeth theſe Axioms, the rate being given, accounting intereſt on intereſt.

The proportion betweene a principall firſt payd to the ſumme of the intereſt and principall, at the end of certaine termes of time, is as a leſſer extreame of certaine geometricall proportionall numbers, to a greater in the ſame proportion, betweene whom there are as many termes of proportion, as there are termes of time interjacent and contrarily. But for Annuities where there are many payments, at the end of the yeares, there would be by the former Axiome as many workes as times of paying the rent, to reduce the value to the preſent time.

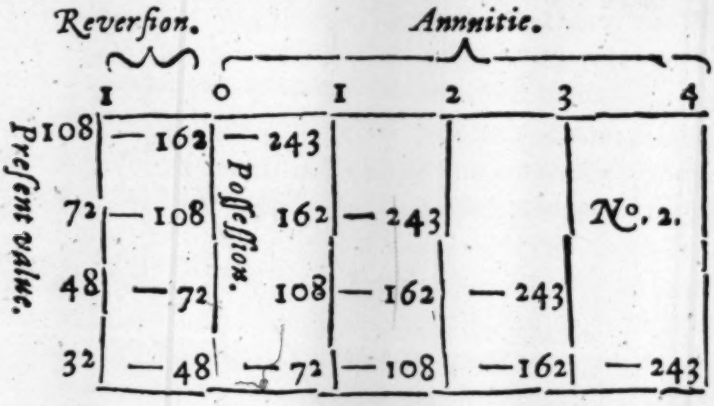
There-

Therefore to avoyd thoſe tedious workes, note this Axiom following of Annuities.

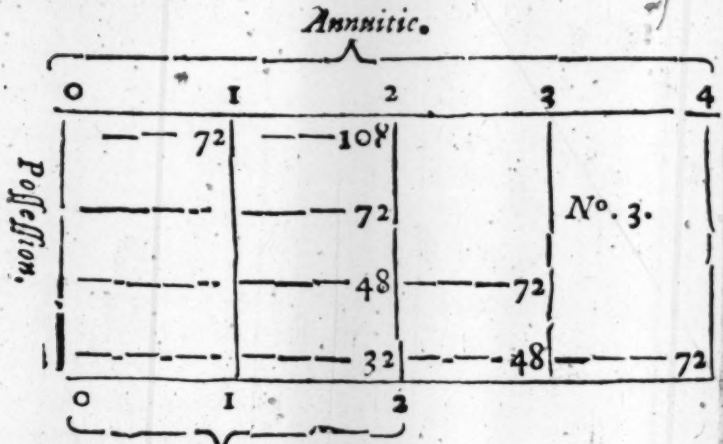
The value of an Annuitie at poſſeſſion to the annuall rent thereof, hath betweene them ſuch proportion, as the ſumme of as many Geometricall proportionall numbers, as the annuitie ſhall containe yeeres, is to the next greater number to that ſumme in the ſame proportion, and contrarily, as in the Example following:



But if the Annuitie were deferr'd, or payd for in Reverſion, certaine termes of times the number of the Progreſſion proportionall to the rent, muſt bee taken the like number of termes from the next greater increaſing, as in the Example following.



But on the contrary, if the payment of the value of the Annuitie were deferr'd a certaine number of termes of time, the number of the Progreſſion proportionall to the Rent, muſt bee taken the like number of termes from the next greater decreaſing, as in the Example.



In all which examples, the value is the ſumme of 32, 48, 72, 108. the next greater number in the progreſſion,

greſſion, is 162, which in the firſt Example is the yearely Rent.

In the ſecond example, which is in reverſion one yeere, the yeerely Rent is 243, one terme greater then the next greater of the ſumme added.

In the third Example, where the payment of the value is deferred two termes, the yeerely Rent is 72, as many termes leſſe then the next greater of the ſumme ſo added: whence it followeth, that if the value of the Annuitie were deferr'd to be payd for, untill the laſt payment of the Rent, *viz.* to the end of the Annuity, the number of the Progreſſion proportionall to the Rent, would bee the leaſt of the numbers added.

CHAP. II.

Of Progreſſion Geometricall.

1 PRogreſſion Geometricall, is, when numbers differ by like reaſon thus: 8. 12. 18. 27. increaſing, or thus, 27. 18. 12. 8. decreaſing, which are ſaid alſo, in this reſpect, to differ by like time.

2 Thoſe quantities of number that differ like time, are proportionall.

3 In Progreſſion Geometricall, there are numbers increaſing, as in the example of Intereſt, *A*, *B*, *C*, *&c.* every one having his increaſed, as *F*, *G*, *H*, *&c.* proper to himſelfe, which are proportionall.

4 The differences of proportionall numbers, are in the ſame proportion, as in this Example:— 16. 24. 36. 54. 81

Whoſe difference is — 8 12 18 27

are in the ſame proportion.

5 The difference of the extreames of Geometricall proportionall numbers, is the ſumme of as many numbers in the ſame proportion, as termes betweene the extreames, as in the former example, the difference of 16, and 81 extreames, betweene whom there are foure termes, is the ſumme of 8, 12, 18 27, foure numbers in the ſame proportion.

6 The ſummes of proportionall numbers, are in the ſame proportion, for by the third of this Chapter, 16 to 8, and 24 to 12, and 36 to 18, and 54 to 27, are in one and the ſame proportion; and 16, 24, 36, 54, added, are in the ſame proportion to 8, 12, 18, 27, added, and contrarily.

Corollarie.

Whereby it is apparent, that As an increaſed is to his increaſing, ſo is the difference of the extreames of divers proportionall numbers to the ſumme of thoſe proportionall numbers, under the next greater extreame, Thus:

As 8 to 16,	ſo is 65 the	8			16
or,	difference of				
as 12 to 24,	16, and 81,	12	to 130,	the ſum	24
or,	the ex-		the ſum	of the	
as 18 to 36,	treames &	18	of the	Conſe-	36
or,	ſum of the		Conſe-	quents	
as 27 to 54	Antecedents	27	quents		54

Vnder the next greater extreame 81.

CHAP.

CHAP. III.

Of Decimall Arithmeticke.

VNite, or one, being conſidered, as a number to bee expreſſed by figures, uſuall in the Art of numbring, or Arithmetick, is the leaſt part of number, and doth not admit of any Diviſion, or part, becauſe no one figure can expreſſe ſuch a part: but the uſe of numbers is to expreſſe ſome quantitie, and a quantitie may admit of infinite diviſions; therefore muſt we imagine the Vnite to be divided into parts, which parts or quantitie, can neither be added, nor deducted, untill they be all reduced into like parts, or denomination, which hath been hitherto accounted the moſt difficult part of Arithmetick, daunting the Learner at the beginning with (*ne ultra*) the other being facile to their underſtanding, where the places towards the left hand doe exceed each other in a decuple proportion; which kinde of account, Cuſtome hath made moſt eaſie: Now if you imagine the quantitie of one unite to bee divided into like parts deſcending, as the integers are expreſſed above a unite aſcending, the worke will be like both in appearance, and eaſe, as if you would expreſſe 546$\frac{3}{5}$, you may doe it thus, 546 3 5, or rather thus, 546: 375, which pricks are called the pricks of diſtinction, diſtinguiſhing the integers 546, from 375, which are called Decimall parts.

1 Which Decimall parts can expreſſe the truth of no Fraction, but thoſe whoſe denominators are 2,

or 5, or their facta: wherefore note this *Theorem* following:

2 If a quantitie, *viz.* a Vnite bee divided into a great number of parts, it is ſaid to be expreſſed very neere, when it differeth not one of that number of parts, as thus: If you would expreſſe $5\frac{2}{7}$ in Decimals, you muſt doe it thus, 5: 2857142, &c. not regarding the fraction remaining, which will not breed any ſenſible errour.

Thirdly, as in whole numbers Ciphers towards the left hand are of no uſe, but muſt not be omitted towards the right hand: ſo on the contrary, in Demalls, Ciphers towards the right hand, are of no uſe, but muſt not bee omitted towards the left, as appeareth by the Decimall Table following; wherein are contained the Decimall parts of twentie ſhillings in a pound of money, and of twelve pence in one ſhilling, and of foure farthings in one penny, whoſe uſe is to find the Decimall part of any Engliſh money; or on the contrary to finde the value in money of any Decimall parts; which Table is calculated to the *Radius* 10000000. in thoſe that cannot by Decimalls bee truely expreſt, in the Reſt are all the ſignificant figures adjoyning to the pricks of Diſtinction, placed in their true places, which *Radius* is equall to the *Radius* uſed in the Tables of Intereſt, &c. as ſhall appeare.

Shillings.

Shillings.	*Parts.*
20	1:
19	: 95.
18	: 9.
17	: 85.
16	: 8.
15	: 75.
14	: 7.
13	: 65.
12	: 6.
11	: 55.
10	: 5.
9	: 45.
8	: 4.
7	: 35.
6	: 3.
5	: 25:
4	: 2.
3	: 15.
2	: 1.
1	: 05:

Pence.	*Parts.*
12	: 05.
11	: 0458333
10	: 0416667
9	: 0375.
8	: 0333333
7	: 0291667
6	: 025.
5	: 0208333
4	: 0166667
3	: 0125.
2	: 0083333
1	: 0041667

farthings.	*Parts.*
4	: 0041667
3	: 003125
2	: 0020833
1	: 0010417

PRO-

PROPOSITION 1.

Of Reduction in Decimalls.

HOw to reduce Fractions into Decimalls, the Rule is thus: as the Denominator of the given Fraction is to the Numerator of the ſame, ſo is 10000000 to the decimall parts, which number you may at your pleaſure either increaſe or diminiſh, as you have occaſion, or deſire exactneſſe, as for example:

I deſire to know what the decimall part of 1. *li.* is, which belongeth to 3. *s.* - 4. *d.* which is the $\frac{1}{5}$ of a pound, ſay as 6, the Denominator is to 1, the Numerator, ſo is 10000000 to: 1666666. the Decimall parts of 3. *s.* — 4. *d.* agreeable to the Table afore going.

Note, that if the fraction given bee an improper fraction, ſo that the Quotient is above ſeven figures, thoſe ſeven toward the right hand, are Decimalls: where you muſt place the prickes of diſtinction, the other figures towards the left, are integers.

PROPOS. 2. & 3.

Of Addition and Subſtraction in Decimalls.

TO adde or ſubſtract Decimalls, is nothing differing from their workes in whole numbers, if you have regard to place the numbers with the prickes of diſtinction one over the other: for as in whole numbers, you muſt place the numbers truly, beginning

beginning at the right hand, and keeping the like order of places toward the left hand: ſo likewiſe in Decimals, you muſt place the pricks of diſtinction one over the other, and proceed both wayes with the like order of places, alwayes remembring, that if there be more places of Decimals in one, than in the other, ſuppoſe thoſe places to be ſupplyed with Cyphers, and worke as in whole numbers, as in theſe Examples following.

Addition.	*Subſtraction.*
724:364	246:348
346:2486	129:25
347:0032	117:098
1417:6158	

Addition.	*Subſtraction.*
248:8764	5678:25
397:679562	4574:549
546:555962	1103:701

PROPOS. 4.

Of Multiplication in Decimals.

MVltiply the numbers together, as in whole numbers, onely remembring after the worke, to ſet the prickes of diſtinction in the product, as many places from the right hand towards the left, as

as there are Decinalls in both the Multiplicant, and Multiplicator, as in the examples.

Note, that in multiplication, where there are many Decimall figures, it ſhall bee onely neceſſary to retaine thoſe ſeven places from the prickes towards the right hand, rejecting the other as ſuperfluous, by the ſecond *Theorem* of this Chapter.

Multiply 364:78 by 98:62, the product will be, 35974:6076.

Multiply 1764000, by 348:438, the product will be 614644632.

Multiply 29:4876437 by 2:48 64876, the product will be 73:2805654, &c.

PROPOS. 5.

Of Diviſion in Decimalls.

THe worke is the ſame that is uſed in whole numbers, if you account both Integers and Decimall parts of the Diviſor, for whole numbers, by taking away the pricks of diſtinction from the Diviſor, and remooving them in the Dividend towards the right hand, as many places as there were Decimall places in the Diviſor, but on the contrary, if there are no Decimalls in the Diviſor, but Cyphers towards the right hand, reject thoſe Cyphers in the Diviſor, and worke with the other figures, firſt, remooving the prickes of diſtinction in the Dividend, as many places towards the left hand, as there were Cyphers in the

Di-

Diviſor: and that you may expreſſe the Decimall parts, let there be ſeven places of parts, from the prickes of diſtinction in the Dividend towards the right hand; then note that ſo many places of parts as you have in the Dividend, ſo many places of parts ſhall there be in the Quotient: If you firſt practiſe the former Rules, as you may by theſe or any other Examples.

Divide 7643 by 54.
The Dividend, 7643:0000000
The Diviſor 54.
The Quotient 141:5370370 &c.

Divide 48972:064 by 250:4.
The Dividend 489720:64.00000
The Diviſor 2504
The Quotient 195:5753354 &c.

Divide 25764:4384. by 72000
The Dividend 25:76443840
The Diviſor 72
The Quotient: 357839 4 &c.

Divide 3969930528 by 10000000
The Dividend 396:9930528
The Diviſor 1.
The Quotient 396:9930528, the ſame with the Dividend, becauſe the Diviſor is one.

But in great Diviſions, the beſt manner that I finde to worke without feare of errour, is thus: As for Example:

Divide 17352(1198:5 by 15938481.

First,

Firſt, make a little Table with the Diviſor to the 9 digets, by doubling him firſt, and afterwards adding the uppermoſt and lowermoſt together, untill 9, as appeareth in the Worke following, placing the Index of each number on the right ſide thereof.

Then underneath place the Divident with the ſeven Decimall parts after the pricks of diſtinction, as you are directed in the Rule of *Diviſion*, and ſubſtract the greateſt number in that Table, from the feweſt figures of the Divident that you can, and write the Index of the number next above the Divident, over the laſt figure towards the right hand, then remoove the next figure of the Divident downe to the Remayner, and place him at the end thereof toward the right hand, and worke as before, as in the Example following plainely appeareth.

The

The Worke.

Diviſor. 15938481—1
31876962—2
47815443—3
63753924—4
79692405—5
95630886—6
111569367—7
127507848—8
143446329—9

Quotient. 108:8686744

Dividend. 173520129 8: 5000000
15938481

141353 19

141353198
127507848

138453505
127507848

10945657 0
95630886

138256840
127507848

107489920
95630886

11859034 0
111569367

7020973 0
6375392 4

64558060
63753924

Remainer. 0804136

The

The Quotient is, 108:8686744.

And if it were neceſſary, you may finde the Fraction remayning, whoſe Numerator is the laſt Remayner.

This worke is ſo plaine and familiar to thoſe that are but meanely ſeene in Arithmeticke, that it will bee needleſſe to inſiſt any further thereon. After the ſame manner by that little Table, you may multiply any number with the Diviſor, or proove your worke, if you doubt thereof.

This is the ſecond Example of the fifth Propoſition of the eighth Chapter following.

TABLES

TABLES

Of Compound Intereſt and Annuities after theſe Rates.

Tables	Rates	Purchaſe	Yeares
1	5	20	20
2	5 1/9	18	
3	6	16	2/3
4	6 1/4	16	2/7
5	7	14	1/2
6	8	12	1/3
7	9	11	1/9
8	10	10	

at — *Per centū per annum Intereſt* — *Annuities.*

Exactly calculated by *W. P.*

Years.	1. *Breviat, Future valuation of present payment.*	2. *Breviat, Future valuation of present annuity.*	3. *Breviat. Annual valuation of future payment.*
1	1 05 00000,00	1 00 00000	1 0000000
2	1 10 25000,00	2 05 00000	4878049
3	1 15 76 2 50,00	3 15 25000	3172086
4	1 21 55062,50	4 31 01250	2320118
5	1 27 62815,62	5 52 56312	1809748
6	1 34 00956,41	6 80 19128	1470175
7	1 40 71004,23	8 14 20085	1228198
8	1 47 74554,44	9 54 91089	1047218
9	1 55 13282,16	11 02 65643	906901
10	1 62 88946,27	12 57 78925	795046
11	1 71 03393,58	14 20 67872	703889
12	1 79 58563,26	15 91 71265	628254
13	1 88 56491,42	17 71 29828	564558
14	1 97 99315,99	19 59 86320	510240
15	2 07 89281,79	21 57 85636	463423
16	2 18 28745,88	23 65 74918	422699
17	2 29 20183,18	25 84 03664	386991
18	2 40 66192,34	28 13 23847	355462
19	2 52 69501,95	30 53 90039	327450
20	2 65 32977,05	33 06 59541	302426
21	2 78 59625,90	35 71 92518	279961
22	2 92 52607,20	38 50 52144	259705
23	3 07 15237,56	41 43 04751	241368
24	3 22 50999,44	44 50 19989	224709
25	3 38 63549,41	47 72 70988	209525

Years.	4. Breviat. Present Valuation of future payment.	5. Breviat. Present valuation of present annuity.	6. Breviat. Annuall Valuation of present paiment.
1	95 23 809, 52	95 23 810	1 05 00 000
2	90 70 294, 78	1 85 94 104	53 78 049
3	86 38 375, 99	2 72 32 480	36 72 086
4	82 27 024, 75	3 54 59 505	28 20 118
5	78 35 261, 66	4 32 94 767	23 09 748
6	74 62 153, 97	5 07 56 921	19 70 175
7	71 06 813, 30	5 78 63 734	17 28 198
8	67 68 393, 62	6 46 32 128	15 47 218
9	64 46 089, 16	7 10 78 217	14 06 901
10	61 39 132, 54	7 72 17 349	12 95 046
11	58 46 792, 89	8 30 64 142	12 03 889
12	55 68 374, 18	8 86 32 516	11 28 254
13	53 03 213, 51	9 39 35 730	10 64 558
14	50 50 679, 53	9 89 86 409	10 10 240
15	48 10 170, 98	10 37 96 580	9 63 423
16	45 81 115, 22	10 83 77 696	9 22 699
17	43 62 966, 88	11 27 40 662	8 86 991
18	41 55 206, 55	11 68 95 869	8 55 462
19	39 57 339, 57	12 08 53 209	8 27 450
20	37 68 894, 83	12 46 22 103	8 02 426
21	35 89 423, 65	12 82 11 527	7 79 961
22	34 18 498, 71	13 16 30 026	7 59 705
23	32 55 713, 06	13 48 85 739	7 41 368
24	31 00 679, 10	13 79 86 418	7 24 709
25	29 53 027, 72	14 09 39 446	7 09 525

Years.	1. Breviat. Future Valuation of present payment,	2. Breviat. Future valuation of present annuity.	3. Breviat. Annuall valuation of future paimẽt.
1	1 0555 5555, 56	1 0000 0000	1 0000 0000
2	1 1141 975, 31	2 0555 5556	4864865
3	1 1760 973, 94	3 1697 531	3154820
4	1 2414 361, 38	4 3458 505	2301046
5	1 3104 048, 12	5 5872 866	1789778
6	1 3832 050, 79	6 8976 914	1449760
7	1 4600 498, 06	8 2808 965	1207599
8	1 5411 636, 84	9 7409 463	1026594
9	1 6267 838, 89	11 2821 100	886359
10	1 7171 607, 72	12 9088 939	774660
11	1 8125 585, 92	14 6260 547	683711
12	1 9132 562, 92	16 4386 133	608324
13	2 0195 483, 08	18 3518 695	544904
14	2 1317 454, 36	20 3714 179	490884
15	2 2501 757, 38	22 5031 633	444382
16	2 3751 855, 01	24 7533 390	403986
17	2 5071 402, 52	27 1285 245	368616
18	2 6464 258, 21	29 6356 648	337431
19	2 7934 494, 78	32 2820 905	309769
20	2 9486 411, 15	35 0755 401	285099
21	3 1124 545, 11	38 0241 812	262991
22	3 2853 686, 50	41 1366 357	243092
23	3 4678 891, 31	44 4220 044	225114
24	3 6605 496, 38	47 8898 935	208812
25	3 8639 35, 07	51 5504 43	19395 8

Years.	4. Breviat. Present Valuation of future payment.	5 Breviat. Present valuation of present annuity	6. Breviat. Annuall Valuation of present paiment.
1	9473684,21	9473684	105555556
2	8975069,25	18448753	5420431
3	8502697,19	26951451	3710375
4	8055186,81	35006633	2856601
5	7631229,61	42637863	2345333
6	7229585,94	49867453	2005316
7	6849081,42	56716534	1763154
8	6488603,45	63205138	1582150
9	6147098 01	69352236	1441915
10	5823566,53	75175802	1330215
11	5517063,03	80692865	1239267
12	5226691,29	85919557	1163879
13	4951602,28	90871159	1100459
14	4690991,63	95562151	1046439
15	4444097,33	100006248	999938
16	4120197,47	104216446	959541
17	3988608,13	108205054	924171
18	3778681,39	111983735	892987
19	3579803,42	115563538	865325
20	3391392,72	118954931	840655
21	3212893,36	122167829	818546
22	3043798,45	125211628	798648
23	2883598,52	128095226	780669
24	2731830,10	130827057	764368
25	2588049,65	133415106	749540

Years.	1. Breviat. Future valuation of present payment.	2. Breviat. Future valuation of present annuity.	3. Breviat. Annual valuation of future payment.
1	1060000000	100000000	100000900
2	1123600000	206000000	48543690
3	1191016000	318360000	31410980
4	1262476960	437461600	22859150
5	1338225578	563709300	17739640
6	1418519112	697531858	14336260
7	1503630259	839383760	11913500
8	1593848075	989746790	10103590
9	1689478959	1149131600	8702220
10	1790847697	1318079490	7586800
11	1898298558	1497164260	6679290
12	2012196472	1686994120	5927790
13	2132928260	1888211370	5296010
14	2260903956	2101506590	4758490
15	2396558193	2327596990	4296280
16	2540351685	2567252810	3895210
17	2692772786	2821287980	3544480
18	2854339153	3090565250	3235650
19	3025599502	3375999170	2962090
20	3207135472	3678559120	2718460
21	3399956601	3999272670	2500450
22	3603537417	4339229030	2304560
23	3819749662	4699582770	2127850
24	4048934641	5081557740	1967900
25	4291870720	5486451200	1822670

Years.	4. Breviat. Present Valuation of future payment.	5. Breviat. Present valuation of present annuity.	6. Breviat. Annuall Valuation of present paiment.
1	9433962,26	9433962	10600000
2	8899964,40	18333927	5454369
3	8396192,83	26730119	3741098
4	7920936,63	34651056	2885915
5	7472581,73	42123638	2373964
6	7049605,40	49173243	2033626
7	6650571,14	55823814	1791350
8	6274123,71	62097938	1610359
9	5918984,64	68016923	1470222
10	5583947,77	73600871	1358680
11	5267875,25	78868746	1267929
12	4969693,64	83838439	1192770
13	4688390,22	88526830	1129601
14	4423009,64	92949839	1075849
15	4172650,61	97122490	1029628
16	3936462,84	101058953	989521
17	3713644,19	104772597	954448
18	3503437,91	108276035	923565
19	3305130,10	111581165	896209
20	3118047,27	114699212	871846
21	2941554,03	117640766	850045
22	2775050,97	120415817	830456
23	2617972,61	123033790	812785
24	2469785,48	125503575	796790
25	2329986,31	127833562	782267

Yeares.	1. Breviat. Future Valuation of present payment,	2. Breviat. Future valuation of present annuity.	3. Breviat. Annuall valuation of future paimẽt.
1	106 25000, 00	10000000	10000000
2	112 89062, 50	20625000	4848485
3	119946 28, 91	31914062	3133415
4	12744293, 21	43908691	2277453
5	13540811, 54	56652985	1765132
6	14387112, 26	70193796	1424627
7	15286306, 78	84580908	1182300
8	16241700, 95	99867215	1001330
9	17256807, 26	116108916	861260
10	18335357, 71	133365723	749818
11	19481317, 57	151701081	659191
12	20698899, 92	171182399	584172
13	21992581, 16	191881299	521156
14	23367117, 49	213873880	467565
15	24827562, 33	237240997	421512
16	26379284, 97	262068560	381580
17	28027990, 28	288447845	346683
18	29779739, 68	316475835	315980
19	31640973, 41	346255575	288804
20	33618534, 25	377896548	264623
21	35719692, 64	411515082	243004
22	37952173, 43	447234775	223596
23	40324184, 26	485186948	206106
24	42844445, 78	525511132	190291
25	45522223, 64	568355578	175946

Years.	4. *Breviat. Preſent valuation of future payment.*	5. *Breviat. Preſent valuation of preſent annuity.*	6. *Breviat. Annual valuation of preſent payment.*
1	9411764,71	9411765	10625000
2	8858131,49	18269896	5473485
3	8337064,93	26606961	3758415
4	7846649,35	34453610	2902453
5	7385081,74	41838692	2390132
6	6950665,16	48789357	2049627
7	6541802,51	55331160	1807300
8	6156990,60	61488150	1626330
9	5794814,68	67282965	1486260
10	5453943,23	72736908	1374818
11	5133123,04	77870031	1284191
12	4831174,62	82701206	1209172
13	4546981,88	87248194	1146156
14	4279518,00	91527712	1092565
15	4027781,65	95555494	1046512
16	3790853,32	99346347	1006580
17	3567861,95	102914209	971683
18	3357987,72	106272197	940980
19	3160459,03	109432656	913804
20	2974549,67	112407205	889623
21	2799576,16	115206781	868004
22	2634895,21	117841677	848596
23	2479901,37	120321578	831106
24	2334024,82	122655603	815291
25	2196729,25	124852332	800946

Years.	1. Breviat. Future Valuation of present payment,	2. Breviat. Future valuation of present annuity.	3. Breviat. Annuall valuation of future paimēt.
1	1 07000000, 00	1 00000000	1 00000000
2	1 14490000, 00	2 07000000	48309218
3	1 22504300, 00	3 21490000	31105217
4	1 31079600, 10	4 43994300	22522811
5	1 40255173, 31	5 75073900	17389071
6	1 50073032, 52	7 15329071	13979581
7	1 60578142, 76	8 65402113	11555321
8	1 71818618, 80	10 25980260	9746781
9	1 83845921, 12	11 97798878	8348651
10	1 96715133, 57	13 81644800	7237751
11	2 10485195, 52	15 78359933	6335691
12	2 25219150, 89	17 88845128	5590201
13	2 40984500, 00	20 14064278	4965081
14	2 57853411, 50	22 55048779	4434491
15	2 75903153, 41	25 12902190	3979461
16	2 95216377, 49	27 88805343	3585761
17	3 15881521, 11	30 84021730	3242521
18	3 37993221, 76	33 99903251	2941261
19	3 61652751, 35	37 37896481	2675301
20	3 86968446, 62	40 99549231	2439291
21	4 14056231, 75	44 86517681	2228901
22	4 43040171, 41	49 00573921	2040581
23	4 74052981, 63	53 43614091	1871391
24	5 07236691, 53	58 17667081	1718901
25	5 42743261, 40	63 24903771	1581051

Yeares.

Years.	4. Breviat. Present valuation of future payment.	5. Breviat. Present valuation of present annuity.	6. Breviat. Annual valuation of present payment.
1	9345794, 39	9345794	10700000
2	8734 ‹87, 28	18080182	5530918
3	8162978, 77	26243160	3810517
4	7628952, 12	33872113	2952281
5	7129861, 79	41001974	2438907
6	6663422, 24	47665397	2097958
7	6227497, 42	53892894	1855532
8	5820091, 05	59712985	1674678
9	5439337, 43	65152322	1534865
10	5083492, 92	70235815	1423775
11	4750927, 96	74986743	1333569
12	4440119, 59	79426863	1259020
13	4149644, 48	83576507	1196508
14	3878172, 41	87454680	1143449
15	3624460, 20	91079140	1097946
16	3387345, 98	94466486	1058576
17	3165743, 90	97632230	1024252
18	2958639, 16	100590869	994126
19	2765083, 33	103355952	967530
20	2584190, 03	105940142	943929
21	2415130, 87	108355273	922890
22	2257131, 65	110612405	904058
23	2109468, 83	112721874	887139
24	1971466, 20	114693340	871890
25	1842491, 78	116535832	858105

Yeares

Years.	1. Breviat, Future valuation of present payment.	2. Breviat, Future valuation of present annuity.	3. Breviat. Annual valuation of future paiment.
1	108 00000, 00	1 00000000	1 00000000
2	1 16 64000, 00	2 08 00000	4 80769 2
3	1 25 97120. 00	3 24 64000	3 08033 5
4	1 36 04889. 60	4 50 61120	2 21 92 08
5	1 46 93280, 77	5 86 66010	1 70456 5
6	1 58 68743, 23	7 33 59290	1 36 31 54
7	1 71 38242, 69	8 92 28034	1 12 07 24
8	1 85 09302, 10	10 63 66276	94 01 48
9	1 99 90046, 27	12 48 75578	80 07 97
10	2 15 89249, 97	14 48 65625	69 02 95
11	2 33 16389, 97	16 64 54875	60 07 63
12	2 51 81701, 17	18 97 71265	52 69 50
13	2 71 96237, 26	21 49 52966	46 52 18
14	2 93 71936, 24	24 21 49203	41 29 69
15	3 17 21691, 14	27 15 21139	36 82 95
16	3 42 59426, 43	30 32 42830	32 97 96
17	3 70 00180, 55	33 75 02257	29 62 94
18	3 99 60194, 99	37 45 02437	26 70 21
19	4 31 57010, 59	41 44 62632	24 12 76
20	4 66 09571, 44	45 76 19643	21 85 22
21	5 03 38337, 15	50 42 29314	19 83 23
22	5 43 65404, 13	55 45 67552	18 03 21
23	5 87 14612, 46	60 89 32956	16 42 22
24	6 34 11807, 37	66 76 47592	14 97 80
25	6 84 84751, 96	73 10 59400	13 67 88

Yeares.

Years.	4. Breviat. Present valuation of future payment.	5. Breviat. Present valuation of present annuity.	6. Breviat. Annual valuation of present payment.
1	92592 59,26	92592 59	10800000
2	85733 88,20	17832 647	5607692
3	79383 22,41	25770 970	3880335
4	73502 98,53	33121 368	3019208
5	68058 31,97	39927 100	2504565
6	63016 96,27	46228 797	2163154
7	58 34903,95	52062 701	1920724
8	54026 88,85	57466 389	1740148
9	50024 89,67	62468 879	1600797
10	46319 34,88	67100 814	1490295
11	42888 28,59	71389 643	1400763
12	39711 37,59	75360 780	1326950
13	36769 79,25	79037 759	1265218
14	34046 10,41	82442 370	1212969
15	31524 17,05	85594 787	1168295
16	29189 04,68	88513 692	1129796
17	27026 89,51	91216 381	1096294
18	25024 90,29	93718 871	1067021
19	23171 20,64	96035 992	1041276
20	21454 82,07	98189 474	1018522
21	19865 57,48	100168 032	998323
22	18394 05,07	101200 7437	980321
23	17031 52,84	103710 589	964222
24	15769 93,37	105287 583	949780
25	14601 79,05	106747 762	936788

Yeares

Years.	1. Breviat. Future Valuation of present payment,	2. Breviat. Future valuation of present annuity.	3. Breviat. Annuall valuation of future paimẽt.
1	1 09 00000, 00	1 0000000	1 0000000
2	1 1881000, 00	2 0900000	4784689
3	1 29 50290, 00	3 2781000	3050548
4	1 41 15816, 10	4 5731290	2186687
5	1 53 86239, 55	5 9847106	1670925
6	1 67 71001, 11	7 5233346	1329198
7	1 82 80391, 21	9 2004347	1086905
8	1 99 25626, 42	1 1028473 8	906744
9	2 17 18932, 79	1 3021036 4	767988
10	2 36 73636, 75	1 5192929 7	658201
11	2 58 04264, 05	1 7560293 4	569467
12	2 81 16647, 82	2 0140719 8	496507
13	3 06 58046, 12	2 2953384 6	435666
14	3 34 17270, 27	2 6019189 2	384332
15	3 64 24824, 60	2 9360916 2	340589
16	3 97 03058, 81	3 3003398 7	302999
17	4 32 76334, 10	3 6973704 6	270462
18	4 71 71204, 17	4 1301338 0	242123
19	5 14 16612, 55	4 6018458 4	217304
20	5 60 44107, 68	5 1160119 6	195465
21	6 10 88077, 37	5 6764530 4	176166
22	6 65 86004, 33	6 2873338 1	159050
23	7 25 78744, 72	6 9531938 6	143819
24	7 91 10831, 75	7 6789813 1	130226
25	8 62 30806, 60	8 4700896 2	118063

Yeares.

Years.	4. Breviat. Present valuation of future payment.	5. Breviat. Present valuation of present annuity.	6. Breviat. Annual valuation of present payment.
1	91743 11,93	91743 12	1 09000 00
2	84 16799,93	1 75911 12	5684689
3	77 21834,80	2 53 12947	3950548
4	7084 252,11	32397199	2086687
5	6499313,86	38896513	2570925
6	5962673,27	44859186	2229198
7	547 1342,45	50329528	1986905
8	501 8662,80	55348191	1806744
9	4604277,80	59952469	1667988
10	4224108,07	64176577	1558201
11	3875328,50	68051906	1469467
12	3555347,25	71607253	1396507
13	3261786,47	74869039	1335666
14	2992464,65	77861504	1284332
15	2745380,41	80606884	1240589
16	2518697,63	83125582	1202999
17	2310731,77	85436314	1170462
18	2119937,40	87556251	1142123
19	1994489,67	89501148	1117304
20	1784308,90	91285457	1095465
21	1636980,64	92922437	1076166
22	1501817,10	94424254	1059050
23	1377813,85	95802068	1043819
24	1264049,41	97066118	1030226
25	1159678,36	98225796	1018063

Yeares

Years.	1. Breviat, Future valuation of present payment.	2. Breviat, Future valuation of present annuity.	3. Breviat. Annual valuation of future paiment.
1	11000000,00	10000000	10000000
2	12100000,00	21000000	4761905
3	13310000,00	33100000	3021148
4	14641000,00	46410000	2154708
5	16105100,00	61051000	1637975
6	17715610,00	77156100	1296074
7	19487171,00	94871710	1054055
8	21435888,10	114358881	874440
9	23579476,91	135794769	736405
10	25937424,60	159374246	627454
11	28531167,06	185311671	539631
12	31384283,77	213842838	467633
13	34522712,14	245227121	407785
14	37974983,36	279749834	357462
15	41772481,69	317724817	314738
16	45949729,86	359497299	278166
17	50544702,85	405447028	246641
18	55599173,13	455991731	219302
19	61159090,45	511590904	195469
20	67274999,40	572749995	174596
21	74002499,44	640024994	156244
22	81402749,39	714027494	140051
23	89543024 33	795430243	125718
24	98497326,76	884973268	113998
25	108347059,43	983470594	101681

Years.	4. Breviat. *Present valuatiō of future payment.*	5. Breviat. *Present valuation of present annuity.*	6. Breviat. *Annual valuation of present payment*
1	9090909, 09	9090909	11000000
2	8264462, 81	17355372	5761905
3	7513148, 01	24868520	4021148
4	6830134, 55	31698654	3154708
5	6209213, 23	37907868	2637975
6	5644739, 30	43552607	2296074
7	5131581, 18	48684188	2054055
8	4665073, 80	53349262	1874440
9	4240976, 18	57590238	1736405
10	3855432, 89	61445671	1627454
11	3504938, 99	64950610	1539631
12	3186308, 18	68136918	1467633
13	2896643, 80	71033562	1407785
14	2633312, 54	73666875	1357462
15	2393920, 49	76060795	1314738
16	2176291, 36	78237086	1278166
17	1978446, 69	80215533	1246641
18	1798587, 90	82014121	1219302
19	1635079, 91	83649201	1195469
20	1486436, 28	85135637	1174595
21	1351305, 71	86486942	1156244
22	1228459, 74	87715403	1140051
23	1116781, 58	88832184	1125718
24	1015255, 98	89847440	1112998
25	922959, 98	90770400	1101681

CHAP. IV.

The Deſcription and Vſe of the Tables.

THe Tables aforegoing containe each of them ſixe ſeverall Breviats, intituled alike; wherefore, whatſoever is ſpoken of one, muſt bee underſtood of them all, which are thus deſcribed:

The firſt Breviats are Numbers in a continuall Geometricall Proportion, increaſing from the *Radius* 25 termes, intituled *future valuation of preſent payment*, which ſheweth what any ſumme of money, put out at Intereſt, will amount unto, at the end of any number of yeares, not above 25, after the rate.

The ſecond Breviats numbers, are ſummes of Geometricall proportionall numbers added, as the third numbers of the ſecond Breviats is the ſumme of the *Radius*, and firſt and ſecond numbers, in the firſt Breviate, intituled *future valuation of preſent Annuitie*, which ſheweth what any Annuity to indure for any number of yeares, not above 25, is worth to be payd for at the end thereof, after the rate.

The third Breviats may bee thus deſcribed; The *Radius* is a meane betweene the numbers in the ſecond and third Breviats, thus in the eighth Table the fifth numbers.

As 61051000 — to 10000000

So 10000000 — to 1637975

Inti-

Intituled *Annuall valuation of future payment*, which ſheweth what Annuitie ought to be had, any number of yeares, not above 25, to recompence a payment that would bee due at the end of the Annuity. according to the rate.

The fourth Breviats are likewiſe numbers in a continuall Geometricall proportion, decreaſing from the *Radius*, intituled *preſent valuation of future payment*, which ſheweth what any ſumme of money due at the end of any number of yeares, not above 25, is worth in ready money, according to the rate.

Note that theſe Breviats are likewiſe called Annuities in reverſion.

The fifth Breviats are the Summes of thoſe proportionall numbers in the forth, as the third number is the ſumme of the firſt, ſecond, and third numbers of the fourth Breviat, intituled *preſent valuation of preſent Annuity*, which ſheweth what any Annuity is worth at the taking poſſeſſion to indure any number of yeares, not above 25 yeares, according to the rate.

The ſixth Breviats may bee thus deſcribed; The *Radius* is a meane between the numbers of the fifth and ſixth Breviates, Thus in the eighth Table the third numbers.

As 24868520 — to 10000000

So 10000000 — to 40211148

Intituled *Annuall valuation of preſent payment*, which

ſheweth what Annuity may be bought for any number of yeares, not above 25, to recompence a preſent payment to have preſent poſſeſſion, according to the rate.

The numbers 1, 2, 3, &c. under yeares in the left ſide of either Page, may bee properly called the Index of yeares or termes, and of the firſt Breviat,

It ſheweth the number of termes of proportion increaſing from the *Radius*.

In the ſecond Breviat, it ſheweth the number of proportionall numbers added, the *Radius* being the leaſt.

In the fourth, it ſheweth the number of termes of proportion, decreaſing from the *Radius*.

In the fifth, it ſheweth the number of proportionall numbers added, the *Radius* being the next greater number in the proportion to the ſumme of the numbers added.

All which Tables are calculated to the *Radius* 10000000, onely the firſt and fourth Breviats are to the *Radius* 10000000,00; where there is two figures more, ſeparated from the reſt with a Comma, or Pricke of diſtinction, towards the right hand, which in worke you may well omit, without feare of ſenſible errour, adding a Vnite to the laſt figure of the Remainder, if the number you cut off bee above 50, as in the firſt Table the firſt number of the fourth Breviat, where from the number 9523809,52 I cut off the two figures towards the right hand 52, and becauſe above 50 I adde a Vnite to the Reſidue thus 9523810, wherewith I worke.

In the practice of which Tables there is need but onely of vulgar Arithmeticke, or thoſe Rules of Deci-

Decimalls before going in the *Rule of proportion*, commonly called the Rule of Three to multiply the ſecond and third numbers together, and divide by the firſt; wherfore ſeeing that *Diviſion* is tedious, I have therefore placed the *Radius* in the middle of the proportion, whereby it will be in the firſt place (if the number of yeares exceede not 25) as theſe Examples following doe plainely ſhow, which are wrought by the Table of the rate given in the Queſtion, and to avoyd repetition, which otherwiſe muſt be done in every queſtion, remember that in all the Examples following there is accounted Intereſt and Intereſt upon Intereſt.

CHAP. V.

Containeth Examples of theſe Breviats.

Firſt Queſtion,

By the firſt Breviats.

IF thirty pounds be put forth at Intereſt for twenty yeares, after the rate of 8 *per cent. per annum*, what ſumme will it amount to?

By the ſixth Table.

As the *Radius* is to the twentyeth number (be-

cauſe twenty yeares) in the firſt Breviate, So is the preſent payment to the future Summe.

As 10000000 — to 4660957 1
So 30 — to 139:828713

Whoſe value is 139. *li.* 16. *s.* 6. *d.* &c.

Second Queſtion.

If fifty pound be put forth at Intereſt for five and twenty yeares, after the rate of 5 *per cent. per annum*, what Summe will it amount unto?

By the firſt Table.

As the *Radius* is to the five and twentieth number in the firſt Breviat (becauſe 25 yeares) ſo is the preſent payment to the future Debt.

As 10000000 — to 33863549
So 50 — to 168:317745

Whoſe value is — 168 *li.* 6. *s.* 4. *d.* &c.

Third Queſtion,

By the ſecond Breviats.

If forty pounds *per annum* bee forborne ſeven yeares, what is it worth at the ſeven yeares end, allowing 7 *per cent. per annum* Intereſt?

By the fifth Table.

As the *Radius* is to the ſeventh number (becauſe ſeven

cauſe 7 yeares) in the ſecond Breviat, So is the Annuall Rent to the future value.

As 10000000 — to 86540211
So 40 — to 346:160844

Whoſe value is 346.*li.* 3.*ſ.* 2.*d.* &c.

The fourth Queſtion.

A oweth *B* five hundred pounds to be paid 50.*li. per annum*, for ten yeares, they agree to forbeare theſe payments till the laſt payment is due, allowing 9 *per cent. per annum* Intereſt, the Queſtion is what it will amount unto.

By the ſeventh Table,

As the *Radius* is to the tenth number (becauſe 10 payments) in the ſecond Breviat, So is the yearely payment to the future debt.

As 10000000 — to 15.1929297
So 50 — to 759:646485

Whoſe value is 759.*li.* 12.*ſ.* 11.*d.* &c.

The fifth Queſtion,

By the third Breviats.

A man dying, gave unto his youngeſt ſon 1000.*li.* to bee payd at the end of twenty yeares, his heires

are willing to make over certaine Land for twenty yeares to ſatisfie the aforeſayd Legacie, the Queſtion is what yearely rent they ought to make over, accounting their money after the rate of *6 per centum, per annum*, Intereſt.

By the third Table.

As the *Radius* is to the twentyeth number (becauſe 20 yeares) in the third Breviat, So is the future Debt to the Annuall Rent.

As 10000000 to 271846

So 1000 to 27:1846

Whoſe value 27.*li.* 3.*s.* 08.*d.* &c.

The ſixth Queſtion,
By the fourth Breviats.

There is certaine Land worth yearely 120.*li.* to be ſold for eighteen yeares purchace, the queſtion is, what it is worth, reckoning both money and Annuity after that rate to pay for it 11 yeares in reverſion.

By the ſecond Table.

As the *Radius* is to the eleventh number (becauſe 11 yeares) in the fourth Breviat, So is eighteen times 120 to the value in reverſion.

As 10000000 to 5517063

So 18 times 120 to 1191:685608

Whoſe value is 1191.*li.* 13.*s.* 8.*d.* &c.

The

The ſeventh Queſtion.

There is certaine Land worth at the taking poſſeſſion 700 *li.* the queſtion is, what it is worth 14 yeares in reverſion, accounting for the forbearance of the mony after the rate of $6\frac{1}{4}$ *per C. per an.* Intereſt.

By the fourth Table.

As the *Radius* is to the fourteenth number (becauſe 14 yeares) of the fourth *Breviat*, So is the value at poſſeſſion to the preſent value.

As 10000000 to 4279518

So 700 to 299:56626

Whoſe value is 299 *li.* 11 *s.* 03 *d*, &c.

The eighth Queſtion.

A man gave unto his Daughter by Will 1000. *li.* to bee payd at the end of ten yeares. The Executors are willing to diſcharge this legacie with ready money, ſo that they may be abated after the rate of 7 *per C. per annum* Intereſt, they agree; the Queſtion is, what ready money they muſt pay.

By the fifth Table.

As the *Radius* is to the tenth number (becauſe 10 yeares) in the fourth Breviat, So is the future Debt to the preſent payment.

As 10000000 to 5083493

So 1000 to 508:3493

Whoſe value is 508 *li.* 6 *s.* 11 *d.*

The

The ninth Queſtion.

By the fifth Breviats.

There is certaine Lands worth 10.*li. per annum*, which if it were to bee ſold, the Fee-ſimple were worth ſixteen yeares purchace, the queſtion is, what a Leaſe for 21 yeares is worth after that rate.

By the fourth Table.

As the *Radius* is to the one and twentieth number (becauſe 21 yeares) in the fifth Breviate, So is the yearely Rent to the preſent value.

As 10000000 to 11520678 1

So 10 to 115:206781

Whoſe value is 115.*li.* 4.*s.* 01.*d.*

The tenth Queſtion.

There is certaine land charged with the payment of 1100.*li.* in 11 yeares, *viz.* 100.*li. per annum*; the queſtion is, what ought to be payd in ready money to diſcharge theſe payments, accounting their money after the rate of 8 per *cent. per annum* Intereſt.

By the ſixth Table.

As the *Radius* is to the eleventh number (becauſe 11 yeares) in the fifth Breviat, So is any yearely payment to the preſent value.

As 10000000 to 71389643

So 100 to 713:89643

Whoſe value is 713.*li.* 17.*s.* 11.*d.* &c.

The

The eleventh Queſtion.

There is an extent on certaine Lands for the payment of 560. *li.* in ſeven yeares, *viz.* 80. *li. per annum.* The owner of this Land will diſcharge this extent with ready money, ſo hee may bee abated after the rate of 10 *per cent. per annum* Intereſt; the Creditour agreeth: they therefore demand what he muſt pay.

By the eighth Table.

As the *Radius* is to the ſeventh number (becauſe 7 payments) in the fifth Breviat, So is Annuall payment to the preſent value.

As 10000000 to 48684188

So 80 to 391:473524

Whoſe value is 391. *li.* 09. *s.* 5. *d.* &c.

The twelfth Queſtion.

By the ſixth Breviat.

A Gentleman hath 400. *li.* in ready money, wherewith hee would buy an Annuity for one and twenty yeares, accounting his money after the rate of 7 *per cent. per annum* Intereſt.

By the fifth Table.

As the *Radius* is to the one and twentyeth number

ber (becauſe 21 yeares) ſo is the preſent money to the yearely Rent.

As 10000000 to 922890

So 400 to 36:9156

Whoſe value is 36.*li*. 18.*s*. 3.*d*. &c.

The thirteenth Queſtion.

A oweth to *B* 600. *li* to be payd preſently; the Creditour deſireth to have it paid in ſixe equall payments, in ſixe yeares next following, allowing him for the forbearance of his money, after the rate of 8 *per cent. per annum* Intereſt. The Queſtion is to know what theſe payments ought to bee.

By the ſixth Table.

As the *Radius* is to the ſixth number (becauſe 6 yeares) in the ſixth Breviat, So is the preſent Debt to the Annuall payment.

As 10000000 to 2163154

So 600 to 129:78924

Whoſe value is 129.*li*. 15.*s*. 9.*d*. &c.

CHAP.

CHAP. VI.

The Continuation of the Tables.

AFter this manner are all ſuch like Queſtions wrought by the Breviats of theſe Tables, as the aforegoing Queſtions doe plainly ſhowe, where you may at your pleaſure alter either the rate by the Table or termes by the number in the Breviat unto 25. But for thoſe that may have farther occaſion of their uſe, I will next ſhow how theſe Breviats may be continued.

Problem I.

How to finde any number in the firſt or fourth Breviats, above 25, and not above 50 at one worke.

The Rule.

As the *Radius* is to the five and twentyeth number of that firſt or fourth Breviat you deſire to know the number in, ſo is another number of the ſame Breviats (whoſe Index is equall to the difference of 25, & the Index of the number ſought for) to the number demanded; As for example.

I deſire to know the fortieth number in the firſt Breviat of the fourth Table, the difference of 25 and 40 is 15, then ſay, As the *Radius* is to the five and twentyeth number, ſo is the fifteenth to the fortieth; in the uſe whereof take all the figures in the firſt

first and fourth Breviats: for, for this use were they left in the Table distinguished from the rest with a Comma, thus:

As 10000000,00 — to 45522223,64

So 24827562,33 — to 11302058 4,48

Wherefore I say that 11302058 4,48 is the fortieth number in the first Breviat of the fourth Table demanded.

The reason of the Rule is because that the numbers in the first and fourth Breviats are numbers in a continuall Geometricall Proportion by the descrip- of them; And by the second *Theorem* of the second Chapter, Quantities that differ like time are proportionall; but there is the like time between 0 and 25, as there is betweene 15 and 40, therefore they are proportionall, which, &c.

Consequent in Proportionall quantities.

The Summe of the Indices of the extreames is equall to the Summe of the Indices of the Meanes: for the summe of 0 and 40, the Indices of the Extreames, is equall to the sum of 15 and 25 the Indices of the Meanes, the Index of the *Radius* is 0, because it is the number first assumed.

After the same manner you may continue the Tables 2 or 3 times, or more if you please.

Problem II.

How to finde any number in the second or fifth Breviats above 25.

The

The Rule.

If you desire to finde a number in the second Breviat on any Table whose Index is above 25, first find by the first Problem the like number in the first Breviat; but if you desire a number of the fifth Breviat, whose Index is above 25, find by the aforesayd Problem the like number in the fourth Breviat, having found the number in the first or fourth Breviats to the *Radius* 10000000,00 as you were formerly directed, divide the Difference of the *Radius*, and the number in the first or fourth Breviat by the rate of the Interest in the title of the Table, rejecting the prick or Comma of Distinction used in the first and fourth Breviats, the Quotient is the same number in the second or fifth Breviats to the *Radius* 10000000 demanded: As for Example.

I desire to know the 40th number in the second Breviat of the fourth Table, the fortieth number in the first Breviat being found by the first Problem to be 1130205 84,48 from whence subtract the *Radius* 10000000,00; the Remainder 1030205 8448 divide by $6\frac{1}{4}$ rejecting the pricks of distinction, the Quotient 164832 9352 is the fortieth number in the second Breviat of the fourth Table demanded.

The reason of the Rule.

The second and fifth Breviats are summes of proportionall numbers, to wit, the numbers in the first and fourth Breviats adjoyning to them, the Index shewing how many proportionall numbers are added

ded by the deſcription; ſecondly it appeareth by the *Corollarie* of the ſecond Chapter, that as an increaſed is to an increaſing, ſo is the Difference of the Extreames of divers proportionall numbers o the ſum of thoſe proportionall numbers under the next greater Extreame: bu: the rate of the Intereſt in the title of each Table is an increaſed by the deſcription of Intereſt in the firſt Chapter, 100 being the principall increaſing. Againe, the difference of the *Radius*, and a number in the firſt and fourth Breviats, is the difference of the Extreames of diverſe proportionall numbers; wherfore it is, as the Intereſt increaſed is to 100 increaſing, ſo is the difference of the *Radius* and a number in the firſt and fourth Breviats to the ſumme of thoſe proportionall numbers under the next greater Extreame: As in the laſt Example.

As $6\frac{1}{4}$ to 100

So 1030205$\frac{84}{100}$ to 1648329352

The greater Extreme to the numbers added, in the ſecond, is the number adjacent to himſelf in the firſt becauſe the firſt Breviat increaſeth.

The greater Extreame to the numbers added in the fifth, is the *Radius*, becauſe the fourth Breviat decreaſeth.

Laſtly, the taking away the pricke of diſtinction, as you are directed in the Rule, is the multiplication by 100, the ſecond number in the proportion by the fourth Propoſition of Decimall Arithmeticke, in the third *Chapter* aforegoing.

Or otherwiſe:

How to finde any number in the ſecond or fifth Breviats,

Breviats, without continuing the number in the firſt or fourth untill 50.

The Rule.

Firſt, for the ſecond Breviats: As the *Radius* is to the five and twentyeth number of the firſt Breviat, ſo is a number in the Breviates of the ſame Table (whoſe Index is equall to the difference of 25, and the Index of the ſought for number) to the difference of the five and twentyeth number of the ſecond Breviat of the ſame Table, and the number demanded. As for example: I deſire to finde the fortieth number of the ſecond Breviat of the fourth Table, the difference of 25 and 40 is 15; Wherfore,

As 10000000, 00 to 45522223, 64

So 237240997 to 1079973772

Whereunto adde ——— 568355578

The ſumme is ——— 1648329350

Agreeing with the former without ſenſible difference.

Secondly, for the fifth Breviats: As the *Radius* is to the five and twentyeth number of the fourth Breviat, ſo is a number in the fifth Breviat of the ſame Table (whoſe Index is equall to the difference of 25, and the Index of the number demanded) to the difference of the five and twentieth number of the fifth Breviat of that Table and the number demanded.

The reaſon of the Rules.

The Rules aforegoing agree with this *Theorem*, as a number in a Geometricall proportion is to another number in the ſame proportion, howſoever diſtant; ſo is a certaine ſumme of thoſe proportionall numbers to the like ſumme of numbers in the ſame proportion, ſituated to the ſecond, as the former ſumme were to the firſt by the ſixth *Theorem* of the 2 Chapter: Wherfore, to make uſe of the Example, the fifteenth number of the ſecond Breviat is the ſumme of 15 proportionall numbers, the *Radius* being the leaſt of thoſe numbers: again, the difference of the five and twentieth number and fortieth in the ſecond Breviate, is likewiſe the ſumme of 15 proportionall numbers in the ſame progreſſion, the five and twentyeth number of the firſt Breviat being the leaſt of thoſe numbers (for that is the next greiter number to the 25 numbers added in the five and twentieth of the ſecond, as is aforeſayd in the Reaſon of the former Rule) wherefore there is the like Summe of proportionalls, and likely ſituated, becauſe they are both the leaſt of thoſe numbers: wherefore they are proportionall, which was to be proved, &c.

The ſame reaſons of the other Rule.

To continue the third and fixth Breviates were needleſſe; for thoſe Queſtions that are wrought by them may bee anſwered by the converſe of the ſecond and fifth; As for Example: The fifth Queſtion anſwered by the third Breviat of the third Table, where the proportion uſed is

As 10:00000 —— to 271846, the twenti-

eth

eth number in the third Breviat, ſo, &c. As in the queſtion. And with the ſame reaſon, uſing the twentieth number in the ſecond Breviat of the ſame Table, you may ſay to the like effect, changing the proportion, As 36785912—— to 10000000, ſo &c. in like manner the Queſtions anſwered by the ſixth Breviat may bee anſwered by the fifth of the ſame Table; As for example: The twelfth Queſtion wrought by the 6 Breviat of the 5 Table, where the proportion uſed is as 10000000 to 922890 the one and twentieth number of the ſixth Breviat, ſo &c. as in the Queſtion: And with the like reaſon, taking the one and twentieth number of the fifth Breviat of the ſame Table, you may with the like effect, changing the proportion, ſay,

As 108355273——— to 10000000, So &c.

For thoſe proportions that are agreeable one to the other, are both, if one, agreeable to a third; but they are agreeable one to another by the deſcription and making of them, and one is agreeable to a third by the worke in the Queſtions aforenamed; wherefore they are both agreeable, which was, &c. Whereby it appeareth that the third and ſixth Breviats are not made of neceſſity, but onely for eaſe and readineſſe to bring the *Radius* into the firſt place, to avoyd the troubleſome paines of Diviſion, and are made out of the ſecond and fifth, as you are directed in their deſcription, whither I muſt refer you for their continuation, if it were neceſſary: but it will be a leſſe worke to anſwer thoſe Queſtions which extend beyond thoſe Breviats by the ſecond and fift continued, than it will be to find the numbers themſelves in the third and ſixth Breviats, that ſhall an-

ſwer thoſe Queſtions; which things underſtood, the order of the former workes will ſerve for the uſe of all theſe Tables, howſoever continued.

CHAP. VII.

Conteyneth a farther deſcription of the Tables, whereby they may be uſed with the numbers themſelves, to fifty yeares.

THeſe Tables may bee uſed to fifty yeares, if you note that the firſt and fourth Breviats of every Tables are numbers in one continuall Geometricall proportion, and may bee joyned together after this manner, where the number *A* is *Radius* to both Breviats joyned together, the one increaſing, the other decreaſing.

First Breviat,	5	161051 00	*B*
	4	14641000	
	3	13310000	
	2	12100000	
	1	11000000	
	0	10000000	*A*
Fourth Breviat,	1	9090909	
	2	8264463	
	3	7513184	
	4	6830135	
	5	6209213	*C*

Whereby it appeareth, the numbers in the firſt and fourth Breviates of any Table, being compared, are diſtant each from other as many termes as is the ſum

ſum of both their Indices, as the number *B* the greater and 5th of the 1 Breviat is diſtant from the number *C*, the 5 of the 4 and leſſer, ten terms equal to the ſumme of both their Indices 5 & 5, thus of all others; and on the contrary any two numbers compared, of the firſt or fourth Breviats, are diſtant each from other as many termes as is the difference of the Indices, as is manifeſt by the Example aforegoing, or by the Tables themſelves.

The like conſideration may be had of the ſecond and fifth Breviats; for if you take a number out of either Breviat of the ſame Table, and adde together, you have the ſumme of as many proportionall numbers in the given rate, as is the ſumme of both their Indices. As for Example: In the firſt Table,

the 16th number of the 2 Breviat —— 236574918
the 13th number of the 5 Breviat —— 93935730

The ſumme whereof added is —— 3305 10648

The ſumme of 29 proportionall numbers in the given rate:

And on the contrary, if you ſubtract a leſſer number out of a greater of the ſame ſecond or fifth Breviat of the ſame Table, the Remayner is as many proportionall numbers, as is the difference of their Indices. As for Example, by the ſixth Table and the fifth Breviat,

the 23 of the fifth is —— 112721814
the ſeventh of the ſame is —— 53892894

The difference is —— 58828920

Sixteene proportionall numbers, the difference of their Indices 23 & 7, thus of all others:

Becauſe in the Propoſitions following in the next Chapter, there is generall *Theorems* for Intereſt and Annuities; therefore where ever there is uſed a ſum of proportionall numbers, as in all Queſtions of Annuities, for diſtinction ſake, the next greater number to that ſumme ſo uſed, ſhall be called the *pro. Radius*, which may be any number in the proportion: For underſtand that every number of the Tables may be *pro. Radius* to all or any of the proportionall numbers next under him: Wherefore note theſe Rules.

Firſt the *Radius* 10000000 hath 25 proportionall numbers under him in the Tables, *viz.* the numbers in the fourth Breviat, which are added together in the fifth; for the Index of the *Radius* is 0 by the firſt example of this Chapter aforegoing, of joyning the firſt and fourth Breviats together.

Secondly, every number in the fourth Breviat hath as many proportionall numbers under him in the Tables, as is the difference of his Index and 25.

Thirdly, every number in the firſt Breviat hath as many proportionall numbers under him in the Tables, as is the ſumme of his Index and 25.

Fourthly, take ſuch a number for the *pro. Radius* that ſhall have as many proportionall numbers under him in the Tables, as the Annuity given or demanded ſhall continue yeares in the Tables I ſay except you will continue the Breviats by the Problemes of the former Chapter, which being done, then you may uſe them to more yeares than fifty, by the *Theorems* of proportion in the following Chapter: Theſe things being well underſtood, that which followeth will bee moſt eaſie.

CHAP.

CHAP. VIII.

Containeth generall Theoremes of Proportions drawne from the first Chapter of Annuities and Intereſts in Propoſitions.

PROPOSITION I.

IF mony be delivered at Intereſt, after a given rate, to know what it will amount unto at the end of certaine termes, the Proportion is:

As a leſſer Extreme is to a greater, between whom there is diſtant as many termes of proportion as termes of time of forbearance; So is the preſent payment to the future Debt, by the Axiome *of Intereſt in the firſt Chapter. As for example:*

A Gentleman bought certaine Lands, which coſt him 300. *li.* in Reverſion, of one life, which man lived thirty yeares after he had payd his money, hee deſireth to know what his money would amount unto by that time, if he had put it out at Intereſt after the rate of 8 *per cent. per annum.*

By the ſixth Table.

As the five and twentieth number of the fourth Breviat is to the fifth of the firſt of the ſame Table, or any other two numbers which are diſtant the like

number of termes; So is the money paid to the price at Poſſeſſion,

As 1460179 — to 14693281

So 300 — to 3018:7972159

Whoſe value is 3018.*li.* 15.*ſ.* 11.*d.* &c.

PROPOS. 2.

If a ſumme of money will bee due at the end of certaine time, to finde what it is worth in ready money, according to a rate given. The proportion is by the *Axiome* of Intereſt in the firſt Chapter.

As a greater Extreme is to a leſſer, diſtant as many termes of proportion from the greater, as it was paid for yeares, before it was due; So is the future ſumme to the preſent value.

There is a Leaſe of certaine Lands, which coſt for forty yeares 1500.*li.* The Queſtion is, what another Leaſe likewiſe for 40 yeares is worth, to bee payd for at the beginning of the former, accounting ſuch profit of their monyes as men have when they buy Land at 18 yeares purchace, that is, after the rate of 5 $\frac{5}{9}$ *per cent. per annum* Intereſt.

By the ſecond Table.

As the fifteenth number of the firſt Breviat is to the five and twentieth of the fourth; So is the money due at the end of the time to the preſent value.

As 22501757 — to 2588050

So 1500 — to 172:5231945

Whoſe value is 172.*li.* 10.*ſ.* 05.*d.* &c.

PRO-

PROPOS. 3.

The Annuall Rent being given of an Annuity, to finde what it is worth at the Poſſeſſion for any number of yeares, according to the given rate; the proportion is,

As a pro. Radius *is to the Summe of as many Geometricall progreconall numbers, as the Annuity continueth yeares: So is the Annuall rent to the Value at the poſſeſſion, by the firſt Example of the* Axiome *of Annuities in the firſt Chapter. As for example:*

I have a Tenement, whole yearely Rent is 20 *markes*, to wit, 13*li.* 6*s.* 8*d.* The Queſtion is, what Fine I muſt demand for a Leaſe of fifty years, reſerving 20*s. per annum* Rent, after the Rate of 5 *per cent. per annum* Intereſt.

By the firſt Table.

As a *pro. Radius, viz.* the five and twentieth number of the firſt Breviat is to the ſumme of 50 numbers in the proportion, *viz.* the ſumme of the 25 numbers of the ſecond and fifth Breviats; So is the difference of the yearely value and reſerved Rent to the Fine that I may demand.

477270988
140939446

As 33863549 — to 618210434

So 12:3333333 — to 225:1564161

Whoſe value is 225*li.* 3*s.* 1*d.* &c.

The

Propos. 4.

What Annuity may be bought for any number of yeats for any ſumme of moneyes, according to a given ate, the Proportion is by the aforeſayd firſt Exampes of the *Axiome* of Annuities of the firſt Chater.

As ſumme of as many Geometricall proportionallnumbers as the Annuity ſhall containe yeares is to the *pro. Radius*; So is the money to be beſtowed to the Annuall rent. As for example:

A Gentleman hath 1000. *li.* to beſtow in an Annuity for his ſonne for 45 yeares. The Queſtion is, wlat Annuall rent he ought to have, valuing his money at $6\frac{1}{4}$ *per cent. per annum*, Intereſt, that is ſuch profit as men have when they buy Land at ſixteene yeares purchace.

By the fourth Table.

As the ſumme of 45 proportionalls, *viz.* the ſum of the twentyeth number in the 2 and 25 of the 5 Breviats is to the *pro. Radius*, the twentyeth in the firſt; So is the money to be beſtowed to the Annuall rent.

3778965 48
1248523 32

As 502748880 to 33618534

So 1000 to 66:8694358

Whoſe value is 66. *li.* 17. *s.* 4. *d.* &c.

Pro-

PROPOS. 5

To finde the value of an Annuity the Rent being given paying for it in reverſion, according to a given rate, at one worke, the proportion is by the ſecond Example of the *Axiome* of Annuities of the firſt Chapter.

Firſt finde the number moſt fitting for the pro. Radius, *and then as a number in the proportion, as many termes greater than the* pro. Radius *as the Annuity is payd for in reverſion yeares, is to the ſumme of as many proportionall numbers, under the* pro. Radius, *as the Annuity muſt be in poſſeſſion yeares; So is the Rent to the value in reverſion.*

To explaine this that hath not been already exemplifyed, wee muſt uſe three Examples: Firſt, if the termes of the Annuity and Reverſion both exceede not 25, As in this Example:

There is certaine Land that is yearely worth 8. *li.* 10. *s.* The Queſtion is what a Leaſe thereof for ſixteene yeares is worth to be payd for ſeven yeares in reverſion, rating their moneyes at 7 *per cent. per annum* Intereſt.

By the fifth Table.

Becauſe that 7 and 16 added is not above 25, let the ſeventh number in the fourth Breviat bee the *pro. Radius*, whereby the *Radius* will be in the firſt place, and the proportion will hold, As the *Radius* is to the difference of the 7 and 23 numbers of the 5 Breviat;

Breviat; So is the Annuall rent to the value in Reversion.

11272187 4
53892894

As 10000000 — to 58828980

So 8:5 — to 50:004663

Whose value is 50.*li.* 00.*s.* 01.*d.* &c.

The second Example.

Where the Annuity is to bee in possession under 25 yeares, but if you adde thereto the yeares in reversion, it will be above 25,

There is certaine Land worth 14.*li.* 15.*s.* *per annum*, all out Rents payd. The Question is, what a Lease for 21 yeares is worth to pay for it 8 yeares in reversion, rating their moneyes at 6 *per cent. per annum* Interest.

By the third Table.

To answer this, let the *Radius* be the *pro. Radius*, and the proportion holdeth as the eighth number in the first Breviat, because 8 yeares in reversion, is to the one and twentieth number in the fifth; So is the Annuall rent to the value demanded.

As 15938481 — to 117640766

So 14:75 — to 108:8686744

Whose value is 108.*li.* 17.*s.* 4.*d.* &c.

The

The third Example.

I have a Leaſe in being for 10 yeares of certaine lands worth more than the Rent that I pay, by 20. *li. per annum*, I would take a new leaſe for thirty yeares in reverſion of the 10 yeares: The queſtion is, what Fine I muſt pay for the ſame, not altering the Rent, rating my money after the rate of 8 *per cent. per annum* Intereſt.

By the ſixth Table.

To anſwer this, let the fifth number in the firſt Breviat be the *pro. Radius*, and the proportion will hold thus:

As a number ten termes greater then the *pro. Radius, viz.* the fifteenth of the firſt, is to the ſumme of the 5 of the 2 & 25 of the fifth Breviats; So is the yearely value more than the Rent to the ſumme of the Fine to be payd for in reverſion.

5 8666010
10674776 2

As 31721691 to 165413772

So 20 to 104:2906394

Whoſe value is 104. *li.* 05. *s.* 09. *d.* &c.

PROPOS. 6.

To finde what Annuity for any number of yeares may

may bee bought in reverſion for any ſumme of money, according to a rate given, the proportion is by the ſecond example of the *Axiome* of Annuities in the firſt Chapter.

As the ſumme of as many proportionall numbers, as the Annuity continueth yeares, is to a number in the proportion, as many termes greater than the pro. Radius, *as the Annuity is payd for in reverſion yeares; So is the ſumme to bee payd in reverſion, to the Annuall rent of the Annuity.* As for example:

I have a Leaſe yet to come thereof ten yeares, and I would take a new Leaſe in reverſion of the old for 35 yeares, for which I am demanded 250. *li.* I would give 100. *li.* ready money, and pay ſuch Annuall rent during the new leaſe, as might countervaile the want of the money of the Fine: The Queſtion is to know how much I muſt increaſe the rent, rating my money after the rate of 5 *per cent. per annum* Intereſt.

By the firſt Table.

Firſt appoynt the *pro. Radius*, which in this Queſtion let be the tenth of the firſt Breviat, then as the ſumme of the 10 of the 2 and 25 of the 5 Breviats is to the 20 of the firſt; So is the money that is not payd of the Fine to the Rent increaſed during the new Leaſe.

1 2 5 7 7 8 9 2 5.
1 4 0 9 3 9 4 4 6

As 2 6 6 7 1 8 3 7 1 to 2 6 5 3 2 9 7 7

So 1 5 0 to 1 4 : 9 2 1 9 0 6 3

Whoſe value is 14. *li.* 18 *s* 05. *d.* &c.

PRO-

PROPOS. 7.

The Annuall rent being given, to finde what an Annuity is worth for any number of yeares, giving time for the payment of the Fine, according to a given rate.

The Proportion is by the third Example of Annuities in the first Chapter.

As a number in the Proportion, as many termes lesse than the pro. Radius *as yeares after possession for payment of the Fine, is to the summe of as many numbers in the proportion as the Annuity is to continue yeares in possession; So is the Annuall rent to the value at that time.*

The first Example.

Where the Annuity after the paiment of the Fine exceeds not 25,

There is land worth 24. *li. per annum*, all out rents payd, the Landlord thereof would make a Lease for 30 yeares, and give five yeares time for payment of the Fine, his profer is accepted, conditionally that they may rate their money betweene them at 8 *per cent. per annum* Interest. The question is, what Fine he must have.

By the sixth Table.

This Question, because the terme of Annuity after the payment of the fine exceedeth not 25 years, may be wrought by the manner used in the fifth Chapter by

by the ſecond and fifth Breviats, but may be wrought by one, if you compound the proportions, or make the fifth number in the firſt Breviat, becauſe 5 yeares in reverſion, the *pro. Radius*, whereby the *Radius*, which is 5 termes leſſe, will be in the firſt place, and the proportion will hold, as the *Radius* is to the ſumme of the 5 of the 2 and 25 of the 5 Breviats; ſo is the Annuall rent to the Fine that hee muſt have.

5 8666010
106747762

As 10000000 — to 165413772

So 24 — to 396:9930528

Whoſe value is 396.*li.* 19.*s.* 10.*d* &c.

The ſecond Example.

Where the Annuity after the paiment of the Fine exceedeth 25,

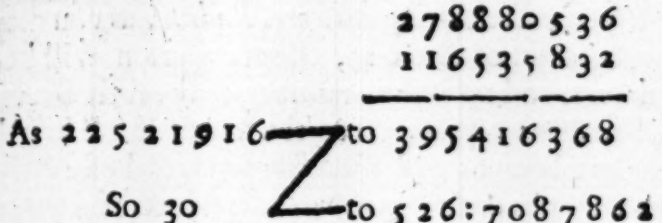
There is Land worth 30.*li. per annum*, what is a Leaſe thereof worth for 41 yeares, if I account my money after 7 *per cent. per annum* Intereſt, and pay the Fine at the end of foure yeares?

By the fifth Table.

Let the ſixteenth of the firſt bee the *pro. Radius*, and the proportion wil be, as the twelfth of the firſt Breviat, foure termes leſſe (becauſe 4 yeares of payment) is to the ſumme of the ſixteenth of the ſecond and five and twentieth of the fifth Breviats; So

is

is the yearely value to the Fine at the time appoynted.



Whoſe value is 526.*li*. 14.*s* 02.*d*. &c.

PROPOS. 8.

To finde what Annuity for any number of yeares may be bought for any ſumme of money that would be due at the end of certaine yeares, according to a given rate.

As a ſumme of as many proportionall numbers as the annuity ſhall continue yeares to a number in the proportion, as many termes leſſe than the pro. Radius, *as the money would bee due yeares after poſſeſſion; So is the money that ought to be payd, to the Annuall rent, that ſhall be receiued, by the third example of Annuities in the firſt Chapter. As for example:*

A Merchant hath 1500.*li*. due to be payd at the end of foure yeares, his Creditour and he agreeth for the payment thereof to take a preſent Annuall rent of certaine Lands for 21 yeares, rating their money betwixt them at 6 ½ *per centum per annum* Intereſt. The Queſtion is what yearely Rent ought to bee payd.

By the fourth Table.

If you make the *Radius*, *pro. Radius*, as you may doe, becauſe not above 25, the proportion will bee as the one and twentieth number of the fifth Breviat, becauſe 21 yeares, is to the fourth of the fourth Breviat, becauſe poſſeſſion foure yeares before the payment was due; So is the money due to be payd to the Annuall rent that ſhall be received.

As 115206781 to 7846649

So 1500 to 102:1638951

Whoſe value is 102.*li* 3.*s*. 3.*d*. &c.

Or if you make the one and twentieth of the firſt Breviat of the ſame Table the *pro. Radius*, the Proportion will be, As the one and twentieth of the ſecond Breviat is to the ſeventeenth of the firſt Breviat, foure termes leſſe than the *pro. Radius*; So is the money due to be payd, to the Annuall rent to be received.

As 411515082 to 28027990

So 1500 to 102:1638983

Whoſe value is 102.*li*. 3.*s*. 3.*d*. &c. as before.

The ſecond Example.

My Landlord profereth me a Leaſe for 40 yeares, but

but hee demandeth 500.*li.* Fine, yet hee will give time to pay it at three yeares end: But I finde that I ſhall not be able to compaſſe for paying of ſo much; I would give him the one halfe of the Fine at the day appoynted, and pay an Annuall rent to recompence the other halfe, if wee can agree to rate our moneyes at 5 *per cent. per annum* Intereſt. The Queſtion is, how much I muſt increaſe my Rent, during my Leaſe.

By the firſt Table.

Let the fifteenth of the firſt bee the *pro Radius*, then as the ſumme of the fifteenth of the ſecond Breviat, and five and twentieth of the fifth Breviat, is to the twelfth of the firſt; So is the halfe of the Fine demanded, to the Rent to bee payd or increaſed.

215785636
140939446

As 356725082 to 17988563

So 250 to 12:585773

Whoſe value is 12.*li.* 11.*s.* 08.*d.* &c.

PROPOS. 9.

The value or price of an Annuity for a certaine number of yeares being given, to know what any other number of yeares the ſame Annuity is worth, according to a given rate.

This Propoſition and the next following may be anſwered at two workes by two of the other Propoſitions aforegoing; but may be anſwered by one *Theorem* of Proportions, thus:

Becauſe in this Demand there is mention made of two Annuities, you muſt firſt appoynt out two numbers in the given proportion for *pro. Radij* as many termes diſtant each from other, as is the difference of yeares of their poſſeſſions, then, As a ſumme of as many proportionall numbers as the Annuity with the knowne Fine contayneth yeares under the *pro. Radius* thereof, is to the ſumme of as many proportionall numbers under the other *pro. Radius*, as the demanded Annuity ſhall continue yeares; So is the knowne Fine to the Fine demanded.

Where note that if both the Annuities have preſent poſſeſſion, or otherwiſe, like different, one number in the Proportion is *pro. Radius* to both Annuities, although in the Worke there is uſe of neither.

The firſt Example.

C. D. tooke a Leaſe of *T. H.* for thirty yeares, and payd 500.*li.* Fine at the poſſeſſion, rating their moneyes at *6 per cent. per annum* Intereſt, and when twelve yeares are expired, *C. D.* will ſurrender his Leaſe backe to his Landlord, conditionally that hee may have for the time unexpired according to the Rate that hee payd for it. The Queſtion is, what the Landlord muſt pay his Tenant to ſurrender his Leaſe.

By

By the third Table.

Finde out the fitteſt numbers to bee the *pro. Radij*, which in this Queſtion is the eighteenth of the firſt Breviat, which is *pro. Radij* to both Annuities becauſe both in poſſeſſion, and then the proportion holds, as the ſumme of the 18 of the 2 Breviat and the 12 of the 5 is to the 18 of the 2, becauſe there were 18 yeares to come; So is the Fine that was firſt payd to the ſumme of money that the Landlord ought to repay backe to the Tenant.

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   309056525
    83838439
   ---------
As 392894964 ─┐ to 309056525
                ├
   So 500       └ to 393:3068037
```

Whoſe value is, 393 *li.* 06. *s.* 01. *d.* &c.

The ſecond Example.

There was a Leaſe made for 21 yeares of certaine Land for 200. *li.* Fine at the poſſeſſion. The Queſtion is, what a Leaſe of 42 yeares is worth, paying for it five yeares in reverſion, rating their moneyes at $5\frac{5}{9}$ *per cent. per annum* Intereſt, or ſuch rates when men pay eighteen yeares purchace for Land.

By the ſecond Table.

Finde out the two fitteſt numbers for the *pro. Radij*, which in this Queſtion are the 17 and 22 of the

first Breviat, the one five termes greater than the other, becauſe the one 5 yeares in reverſion, then, As the difference of the 22 and firſt numbers of the ſecond Breviat is to the ſumme of the 17 of the 2 and 25 of the fifth; So is the knowne Fine to the Fine demanded.

411366357		271285245	
100000000		133415106	
As 401366357	to	404700331	
So 200	to	201;66133221	

Whoſe value is 201.*li.* 13 *s.* 02 *d.* &c.

PROPOS. 10.

Having an Annuity for a certain number of yeares, whoſe Annuall rent is certainely knowne, to finde what Annuall rent of another Annuity ought to bee given for it in exchange for any other number of yeares, according to a given rate.

This Propoſition ſeemeth to be wrought by reciprocall proportion (or as it uſed to be called the Backer Rule of three) becauſe the more yeares, the leſſe Rent, yet having found out the 2 fitteſt numbers for the *pro. Radij*, as in the former Propoſition, The *Proportion*, according to the Doctrine of the Rule of three direct, holdeth *as the ſumme of as many proportionall numbers as the demanded Rent ſhall continue yeares under the* pro. Radius *thereof is to the ſumme of as many proportionall numbers, as the given rent is*

to

to continue yeares under the other pro. Radius; *So is the Rent given to the Rent demanded.*

The firſt Example.

A.B. hath a Leaſe of a Tenement for 10 yeares yet to come, worth 40.*li. per annum* more than the Rent, and he will ſurrender his Leaſe, if he can take a new Leaſe for 21 yeares without paying a preſent Fine: but hee would increaſe the old Rent, during the whole time of one and twenty yeares, rating their moneyes betwixt them after the rate of 8 *per cent. per annum* Intereſt. The Queſtion is, what the yearely value of his new Leaſe for 21 yeares ought to be, beſides the Annuall rent.

This Queſtion is in effect to give a Leaſe of ten yeares in poſſeſſion, worth 40.*li. per an.* in exchange for another of 21 yeares, to have likewiſe preſent Poſſeſſion.

By the ſixth Table.

The *Radius* will ſerve for *pro. Radius* for both theſe Annuities, being both in poſſeſſion, and not above 25 yeares; wherefore the Proportion is, as the 21 number of the 5 Breviat, is to the 10 number of the ſame, ſo is 40 *li.* (the yearely value above the Rent) to the Annuall value of his Annuity more than his Rent.

As 100168032 to 67100814

So 40 to 26:7953009

Whoſe value is 26.*li.* 15.*s.* 10.*d.* &c.

But if the Demand were how much hee muſt increaſe his rent, the queſtion were then in effect thus;

What Annuall rent for 21 yeares to beginne preſently, ought to be given in exchange for an Annuity 11 yeares, worth 40.*li. per annum* in reverſion 10 yeares after the rate?

Here the Annuities are ten yeares different in poſſeſſion;

Wherefore if you make the 21 and 11 of the firſt Breviat *pro. Radij*, the Proportion will be, as the 21 of the ſecond Breviat, is to the 11 of the ſame; ſo is 40.*li.* to the ſumme of money that he muſt yearely pay more than the former Rent.

As 50429214 — to 166454875

So 40 — to 13:2046990

Whoſe value is 13.*li.* 4.*s.* 01*d.* &c.

Which may bee alſo found by ſubtracting 26.*li.* 15.*s.* 10.*d.* &c. the remayning value of the Annuity from 40.*li.* the former value.

Or you may make the *Radius* and tenth of the 4 Breviat, the *pro. Radij*, and then the Proportion will be, as the 21 of the fifth Breviat is to the difference of the 11 and 21 of the ſame Breviat; ſo is 40.*li.* to Rent increaſed.

100168032
67100814

As 100168032 — to 33067218

So 40 — to 13:2046990

Whoſe value is 13.*li.* 4.*s.* 01*d.* &c. as before.

Exam-

The ſecond Example.

There is Land worth 50.*li. per annum* more than the Rent, and there is foure yeares to come of an old Leaſe; Now I am profered a Leaſe thereof for five and thirty yeares, which I would willingly accept, if I can (not altering the Rent) have time for the payment of the Fine at ſixe equall payments in the ſixe yeares next following, rating our moneyes betwixt us at 5 $\frac{1}{2}$ *per centum per annum* Intereſt, or ſuch rates, when men pay eighteene yeares purchace for Land. The Queſtion is, what one of thoſe payments will bee.

This Queſtion is likewiſe in effect what 6 yearely payments or Annuity for ſixe yeares ought to bee given for 35 yeares of another Annuity in reverſion foure yeares worth 50.*li. per annum*.

By the ſecond Table.

Appoynt two nimbers for the *pro. Radij*, the leaſt whereof muſtbee the tenth of the firſt Breviat, for the 35 yeares, the other muſt be foure termes greater, *viz.* the fourteenth of the ſame, and then the Proportion holds, as the difference of the fourteenth of the ſecond, and eighth of the ſame is to the ſumme of the tenth of the ſecond, and five and twentieth of the fifth; ſo is 50.*li.* the known yearely rent, to the ſum of one of the ſixe equall yearely payments.

As

203714179	129088939
97409463	133415106
As 106304716	to 262504045
So 50	to 123:4677326

Whose value is 123 *li.* 9*s.* 04 *d.* &c.

Propos. 11.

A ſumme of money being put out at Intereſt, to receive for it a certaine Annual ſum, to know how many yeares it will bee before both the Principall and Intereſt be payd, and what the laſt payment will bee, according to a given rate.

If the number of payments exceed not 25 yeares, then the Rule is thus:

Firſt, *As a yearely payment is to the Principall; So is the* Radius *to a fourth number, with which number enter the fifth Breviat of the Table of the rate given, and ſeek the next leſſer number, the Index whereof ſheweth the number of thoſe full payments.*

Secondly, *As the* Radius *is to the next leſſer number before found; So is a yearely payment to the preſent value of thoſe full payments.*

Thirdly, *As the* Radius *is to a number in the firſt Breviat of the ſame Table, whoſe Index is one terme greater than the full payments were; So is the difference of the principall and preſent value of the full payments to the ſumme of the laſt payment. As for example:*

R. C. tooke up 100 *li.* of *I. L.* to pay for it 11 *li.*

per

per annum, during the life of *I. L.* Now the Queſtion is, how long it will bee before both the Principall and Intereſt, after the rate of 8 *per centum per annum* compound Intereſt will bee payd, and what the laſt payment would bee, that neither Partie may haye wrong.

Firſt ſay,

As 11 to 100

So 100000000 to 90909090 the 4 number, with which number enter the fifth Breviat of the ſixth Table, the given rate; the next leſſer number is 88513692, the ſixteenth number of that Breviat, which ſheweth that there was ſixteen whole payments.

Secondly, ſay

As 100000000 to 88513692

So 11 to 97:3650612 which ſubtract from 100 the principall given, the Remayner is 2:6349388

Thirdly, ſay

As 100000000 to 37000181

So 2:6349388 to 9:7493212

Whoſe value is 9.*li.* 14.*s.* 11.*d.* &c. the ſumme of the laſt payment the ſeventeenth yeare.

But

But thoſe two laſt workes may perhaps be more eaſily wrought by one after this manner:

As the ſeventeenth number of the fourth Breviat (to wit, a number one terme greater than the next leſſer laſt ſought for in the fifth) is to the difference of the fourth number before found, and the next leſſer in the fifth Breviat ſought for; So is 11 an Annuall payment to the ſumme of the laſt payment in the ſeventeenth yeare.

Fourth number before found is —— 90909090

The next leſſer is —————— 88513692

The Difference is —————— 2395398

Then, As 27022680 to 2395398

So 11 to 9:7493156

Whoſe value is 9.li. 14.s. 11.d. &c. As before found.

The reaſon both of this worke and the former, cannot bee obſcure to him that underſtandeth the eight firſt Propoſitions of this Chapter; wherefore I will not in this place make any further demonſtration.

All other Queſtions that belong to this Propoſition, that containe more yeares than five and twentie, or that the Annuall payments begin before or after the principall bee payd, or that are of like nature of this following Queſtion, ſhall be left to the curious

curious ſearcher to practiſe at their leaſure.

E. G. would take a Leaſe of *L. N.* for twelve yeares, and have preſent poſſeſſion of certaine land worth more than the quit-rent by 80. *li. per annum*, and for ſatisfaction thereof, hee would at the end of three yeares make over of his owne lands worth 200. *li. per annum*, the queſtion is, how many whole yeares rent at that time, and how much ought to be payd the laſt payment, not wronging each other, rating their moneys betwixt them at $6\frac{1}{4}$ *per centum per annum* Intereſt.

The work I purpoſely omit, becauſe it is wrought by two of the former Propoſitions, I will only give the Anſwer, which is;

L. N. muſt have 4 whole yeares rents of 200. *li.* & the 5 yeare he is to receive 141. *li.* 10. *ſ.* 1. *d.* $\frac{1}{2}$ &c. according to that rate.

There are diverſe other manner of compound Queſtions of Annuities, that may bee propounded, as thus, Where ſome of the yeares are of greater value than other, or to give one Annuity for another with ſome moneyes, with infinite others; but becauſe they cannot be anſwered with one worke, but muſt be reduced to diverſe of the foregoing Propoſitions, it ſhall bee needeleſſe to give any ſuch like Queſtions; for I ſhall but repeate againe what hath beene already written: wherefore I will conclude this Chapter with this following Propoſition, which may ſerve both for variety and eaſe in moſt of the former workes.

PRO-

PROPOS. 11.

Any one whole number of the aforegoing Tables being given in the firſt place of the Proportion, whereby there will be a Diviſion in the Worke to convert that Diviſion into a multiplication.

Firſt, if a number of the firſt Breviat be the Diviſor, in ſtead of dividing the Dividend, multiply it by ſuch a number of the fourth Breviat of the ſame Table, whoſe Index is equall to the Index of the Diviſor, and place the Prickes of diſtinction in the Product, fourteen figures from the right hand towards the left, as the Example of the ſecond Propoſition of this Chapter, where the Proportion by the ſecond Table uſed is

As 22501757 to 2588050

So 1500 to 172:5231945

In ſtead whereof you may now ſay to the like effect:

As { 10000000 times 10000000 } to { 4444097 times 2588050 }

So 1500 to 172:5231706 &c.

Whoſe value is 172. *li.* 10. *s.* 5. *d.* &c. as before.

And on the contrary, if any number of the fourth

Breviat

Breviat bee given for a Diviſor, multiply the Dividend by a number of the firſt Breviat of the ſame Table, whoſe Index is equall to the Index of the Diviſor, as the example of the firſt Propoſition, where the Proportion by the ſixth Table uſed is

As 1460179 to 14693281

So 3000 to 3018:7972159

In ſtead whereof, you may now ſay to the like effect:

As { 10000000 times 10000000 } to { 68484752 times 14693281 }

So 300 to 3018:7971160 &c.

Whoſe value is 3018*li.* 15*s.* 11*d.* &c.

Secondly, a number of the ſecond Breviate being given for a Diviſor, multiply the Dividend by the like number of the third of the ſame Table, and contrarily,

As the ſecond proportion of the firſt Example of the eighth Propoſition of this Chapter, where the Proportion by the fourth Table is:

As 411515082 to 28027990

So 1500 to 102:1638983

In

In ſtead whereof, you may now ſay to the like effect:

As { 10000000 times 10000000 } to { 28027990 times 243004 }
So 1500 to 102 : 16 ; 7052 &c.

Whoſe value is 102.*li.* 03.*s.* 03.*d.* &c. as before.

Thirdly, if a number of the fifth Breviat bee given for a Diviſor, multiply the Dividend by the like number of the ſixth Breviat of the ſame Table, and contrarily,

As the firſt Example of the tenth Propoſition of this Chapter, where the Proportion by the ſixth Table uſed is thus:

As 100168032 to 67100814
So 40 to 26:7953009

In ſtead whereof, you may now ſay to the like effect:

As { 10000000 times 10000000 } to { 998823 times 67100814 }
So 40 to 26:7953143 &c.

Whoſe value is 26.*li.* 15.*s.* 10.*d.* &c. as before found.

Thoſe

Thoſe ſmall differences that are in the Decimal parts, are ſo farre from breeding any diſlike in the Rules, or feare of errour in the Tables, that they may rather confirme the truth of both, as may bee gathered from the firſt and ſecond *Theorems* of the third Chapter aforegoing: for if that errour that was but ſmall in the beginning, being multiplyed many hundred or thouſand times it will appeare, but not to differ one penny in many thouſand pounds.

He that deſireth more variety of workes, let him continue the Breviats by the Rules of the ſixt Chapter aforegoing, and he may bee abundantly ſatisfyed, and may uſe theſe Tables to 75 or 100 yeares, if occaſion ſo require.

CHAP. IX.

Directions for the uſe of Tables of compound intereſt.

THus have I given the whole Doctrine of Intereſts, Annuities, & Reverſions; or at leaſt as much as is requiſite for uſe, with certaine and infallable generall Theorems of proportions drawne from oculer demonſtrations in the firſt Chapter, which may be applyed to any other tables or rates of compound intereſt; and becauſe I find that neither of theſe tables, nor any other are wholly agreeable to the cuſtome of theſe times in this cauſe, for men in theſe things are more ruled thereby, then by Art. Neither doe I thinke any can bee made wholly agreeable thereto, the cauſes are ſo different, for who knoweth not that ſome land is better worth 20. yeares purchaſe, then ſome other 16. carrying with it many times to their poſterity, a greater inconvenience then the whole value thereof: and againe, houſes which are in the nature of Annuities (candle rents termed) have a danger of caſualtie, beſides the continuall charge of reparation, which doth much diminiſh the value thereof. And againe, I find the longer an Annuitie is to continue, the leſſer is the intereſt, and the ſhorter time, the greater betwixt 8 and 5. *per cent.* accounting Compound Intereſt; and the cauſe is I conceive, becauſe when men have an

an assurance of their estates for many yeares, they are the willinger to take lesse gaines; for if the time be short, thus they thinke, that this will be quickly expired, and then we shall be as farre to seeke as now wee are. And who knoweth what bargaine for longer time we may lose for want of monies, by taking this that is not worth the speaking of.

Here are therefore tables of divers rates in an uniforme order, composed for avoyding of multiplicity of rules and examples which you may use as occasion requireth; for here, by the first table, may the Landlord find what to demand for a lease of any number of yeares for an Annuitie, when hee esteemeth the Fee thereof to bee worth 20. yeares purchase: here also by the sixth Table may the well monied man, who valueth his money at 8. *per cent.* find what to proffer for an Annuitie of any number of yeares; and because these rates are indifferent, here are therefore foure meanes betwixt them to compose differences. *viz.* at 7. and 6. *per centum per annum*, and 16. and 18. yeares purchase for the Fee. Here is likewise tables at 9 and 10. *per cent. per ann* which I will not commend to thee for thy ordinary use, but for thy necessitie, except thou art an unconscionable and hardned Usurer then leave these rates to thy desires, withall warning young gentlemen to take heed what bargaines they make with thee, setting them up as Beacons to avoyd danger, lest you shipwracke their estates.

But I thinke I heare some of you say, that it is no bargaine for you, if you cannot have it after the rate of 8. *per cent.* in the yeare, as the statute doth allow, and therefore what need there

other tables to any other rates.

The ſtatute doth not allow any man to take any Intereſt at all, but for the hardneſſe of our hearts, and for the increaſe of commerce one with the other, & avoyding other inconveniences that would be farre more burthenſome to the Common-wealth, it doth connive at thoſe that will take intereſt: But withall adding limits to their gaines, although it cannot to their deſires, not to take above 8. *per cent.* in the yeare, and yet I doubt whether any man that for every hundred pounds hee hath, maketh 8. li. every yeare with it, beſides the hazard and adventure of looſing the principall, or ſtaying a long time for their monies by bad debtors; and were it not an unreaſonable thing thinkeſt thou, to ſeeke for that gaines on land, where thou maiſt have an eſtate? if cautu'ous, void of many of theſe caſualties, which is incident to mony; I know thou wilt ſay, thy ſelfe that 12, yeares purchaſe is too little of all reaſon to bee profered for the Fee ſimple of land, and yet canſt thou bee content to take a leaſe of yeares after that rate? But thou wilt ſay that it is every mans part to make his bargaine as good cheape as he can, neither is it within the compaſſe of uſurie or extortion ſo to doe.

Indeed I confeſſe the Common-law doth not take hold of it by reaſon of the conſideration, yet call a Court of conſcience in thy owne heart, and thou maiſt eaſily ſee that there is farre greater uſurie in ſuch like bargaines then in monies, as many have found in paying for their neceſſities and lacke of money, in binding their land to pay both principall and intereſt in certaine yeares, whereas many times they give

give above eleven in the hundred for a yeare, compound intereſt, which is not by the ſtatute tollerated at 8. *per cent.* in the opinion of the ludicious, much leſſe at greater rates, wherefore thoſe are too blame that in making tables of Compound intereſt at 8. *per cent.* for moneths &c. affirme that it is tollerated by the ſtatute, making a faire ſhew at the firſt by taking leſſe then foure in the hundred for ſixe moneths; much like cunning Gameſters, giving leave to win at firſt that they may the better afterwards take advantage. But take heed what followeth; for by this account the Intereſt that at firſt ſeemed to begin but ſlowly, will in the end goe on into the debtors eſtate with more then a *Pegaſon* ſwiftneſſe, for they make the Intereſt ſtill working for the lender before it bee his owne, which if continued, goeth deepe, for as I conceive the Intereſt is not the lenders to make any profit of, untill the debt be due, and not then neither, except paid, or elſe ſome new agreement be made betweene them: That the borrower acknowledgeth to have a greater principall in his hands.

But then it may be asked me, why I haue made all theſe tables of compound intereſt, ſeeing I blame others that make them?

I anſwer, I blame them not for making the tables, but for interpreting the law to tollerate compound intereſt; I muſt ingeniouſly confeſſe, that they are made according to art, as I likewiſe haue made theſe: And yet although that compound intereſt at 8. *per cent.* bee both unreaſonable and intollerable, it followeth not but that leſſer rates may bee better ſuffered, and ſo long as there is buying and ſelling of

Annuities and reuerſions, there will be ſuch like intereſts vſed.

But ſome againe may think, that if tables to theſe rates had beene made to halfe, yearely, or quarterly payments, they had beene more reaſonable to bee vſed.

Indeed I confeſſe I might haue made theſe or as many other to both halfe, yearely or quarterly payments, or leſſer times to theſe or any other rates, for there is no end of making them.

But the difference betweene theſe and others to the ſame rates of leſſer times of payments, is not ſo great but thou maiſt reconcile without much damage to thee if thou art willing to bargaine.

For if thou art one that ſelleſt, and thinkeſt the value of thy Annuitie to bee the greater, becauſe thou canſt haue the rent quarterly, and doſt (as I ſuppoſe) eſteeme the Fee thereof at 20. yeares purchaſe; know then that thou doeſt ſtill value thine Annuitie at 80. quarterly payments. But thou addeſt to the price of the intereſt for a yeare; for money will not according to art lye idle after a payment made; and the greater the intereſt is, the leſſer is the price of an Annuitie at poſſeſſion, as appeareth by the fifth Breuiats of the foregoing tables.

But if thou doeſt under value thine owne, there are greater rates for thee to make uſe of: But I know that hee that taketh it of thee will profer little enough, thou mayeſt abate when thou wilt.

For note that the leſſer the times are of paying the rent, the greater is the intereſt for an yeare, and the leſſer is the fine of the Annuitie being taken for yeares.

But

But if thou art a buyer, and doſt intend to giue after the rate of 16. or 18. yeares purchaſe, but thinkeſt it too deare if thou houldeſt account Intereſt of whole yearely payments, thou maiſt eaſily bee ſatisfied (if not too curious) by making uſe of a greater rate; for no man will bee tyed ſo ſtrictly to theſe, or any other in their uſe not to differ from the preciſeneſſe of their rules: Neuertheleſſe, I beleeue they may giue both Leſſor and Leſſee directions, to take heed that they be not ouerreached in ſuch like bargaines, which is the true uſe of ſuch like tables.

Thus if thou conſidereſt the Annuitie, thou art to buy or ſell for yeares, whether there bee a charge or caſualtie annexed unto it, as in all buildings which will yeeld no profit without a Tenant; the yeare as it commeth about doth not bring in the reuenue with it as it will in land, which in many places is daily improued, I meane in goodneſſe for the occupier, not the rents for the Landlord, which are indeed too much every day increaſed, it will bee no hard matter to find the vſuall value of an Annuitie.

CHAP. X.

Of simple Interest.

THese Tables of Compound Interest aforegoing are troublesome and intricate to use, except thou art skilfull in Arithmeticke: wherefore I will in this place shew a briefe and easie generall rule, which thou mayst carry in memory for the value of Annuities at possession, with the aforesaid consideration, which is at 8 *per centum* simple Interest, where the time is equated to one payment, which thou mayst compare both with the former rates of Compound Interest, and the custome now used at thy better leisure, as thus for example: There is 600. *li.* to be payd in sixe yeares, *viz.* 100. *li. per annum*: The Question is what these payments are worth in ready money, to abate after the rate of 8 *per centum per annum* Simple Interest.

First equate the time, according to the ordinary Rules thereof, thus:

100 . 1	100	
100 . 2	200	The equall times
100 . 3	300	are 3 : 5 yeares
100 . 4	400	when the whole
100 . 5	500	money ought to
100 . 6	600	be payd.
600 .	2100	

Which

Which is done with more expe... ſummes to be payd are equall, and the time... ment like diſ:rent, adde one to the number... ments, the ½ whereof is the time equated, ... former example the number of payments is ... many yeares adde one thereto, the ſumme is 7 ... halfe whereof 3 : 5 yeares is the time equated as before; Secondly multiply the equated time by the rate of the Intereſt, and adde the product thereof to 100 the ſumme whereof is the firſt number in the Rule of three, as thus: the equated time 3 : 5 yeares being multiplyed by 8 the Intereſt for a yeare, the Product is 28 whereunto adde 100 the ſumme is 128 the firſt number.

Thirdly, as the firſt number is to 100, ſo is the ſumme of all the payments to the value of thoſe payments in ready money according to the rate:

As 128 — to 100

So 600 — to 468:75

Whoſe value is 468. *li.* 15. *s.*

But if the times of the payments bee whole yeares, and the rate 8. *per cent.* it may bee more briefely performed in one worke thus.

Adde the number of payments to 26 and ſay as the ſumme thereof is to the number of payments added,

ſo

So is 25 times one payments to the value of those payments according to the rate aforesaid.

26
6

As 32 — to 6

So 25 times 100 — to 468 : 75 as before.

The second Example.

What is Annuitie worth for 24 yeares, whose yearely rent is 50. *li. per annum*, abating after the rate of 8 *per centum per annum* simple Interest.

26
24

As 50 — to 24

So 25 times 50 — to 600.

After the same manner may all Annuities bee wrought; and I could make tables unto this rate according to the order of the fifth Breviats of the former tables, but it will be needlesse, it being so easie and generall for any number of yeares.

Now I esteeme this order of worke before any other rate for purchases with present possession; and the

the reaſon is, in that there is alwayes accounted ſimple Intereſt within the limits of the ſtatute; for as I ſaid before, Compound Intereſt at 8 *per cent.* is not allowable, as you may more at large ſee in *Lex Mercatoria* on this ſubject.

A ſecond reaſon why I eſteeme this, is becauſe it ſeemeth to mee to bee according to the intent of the Law-makers: For in former time when the libertie of the ſtatute did connive at 10 *per centum* for a yeare, then was land worth 20 yeares purchaſe, the juſt value thereof according to that rate, accounting ſimple intereſt. But after when men ſeeing the profit of ſuch exceeding gaines, and began to account intereſt on intereſt, they found that their gaines in money was farre greater (and their trade eaſier, although more impious) then any wayes to be made on land, they began to draw backe and undervalue land; for by ſuch extreame vſurie, Merchants, Tradeſmen, and others being extreamely impoveriſhed that they were enforced to ſell their Land at ſuch rates as the Vſurer pleaſed, which being taken into conſideration by our high Court of Parliament, they filed the teeth of vſurie, making the utmoſt limits thereof not to exceed eight in the hundred for a yeare: hereby raiſing the price of Land, which according to the former rate of ſimple Intereſt were 25 yeares purchaſe for the Fee. But the gaine of Compound Intereſt will not ſuffer it to exceed 20 yeares purchaſe and moſt times under.

I could in this place ſhew almoſt the whole agreement of this rate to the cuſtome of theſe times in this caſe uſed, which is more neere then any other

[illegible] in part appeareth by the last [illegible]ection in [illegible] Chapter.

[illegible] answere an objection that may bee made against it, by some that [illegible] before written other rates of simple [illegible] Annuities, but [illegible] not contend with shadowes.

It remaineth now in the last place that I should say something concerning Leases for lives, but the custome of the place is the onely rule thereof: neither can there bee any other given: Wherefore it behooveth the Taker to bee very circumspect therein, for the lives of all persons are not alike, one may bee as well too young as too old; for as according to the Proverbe, as soone comes the Lambe skin to the market as an old Ewe; but men commonly value their owne lives and their neerest and dearest friends [illegible] shall enjoy the Annuitie after them before o[illegible] neither doe I bl[illegible] them therein; for then they are certaine wher[illegible] to [illegible] trust during their lives; but in respect of the Landlord all lives are almost alike, there being an adventure therein, for who [illegible] which person shall live longest.

[illegible] I find there is a correspondencie between [illegible] and lives, in respect of the fine; for some [illegible] three lives and 21 yeares, others 24 [illegible] have commonly the same Fine: and againe, [illegible] and [illegible] are equal: For my part I will [illegible] of [illegible] matter, but leave it to others [illegible] [illegible]on.

FINIS.